# BOTANICAL MISCELLANY;

CONTAINING

FIGURES AND DESCRIPTIONS

OF

SUCH PLANTS AS RECOMMEND THEMSELVES BY THEIR
NOVELTY, RARITY, OR HISTORY,

OR BY

THE USES TO WHICH THEY ARE APPLIED IN

THE ARTS,

IN MEDICINE, AND IN DOMESTIC ŒCONOMY;

TOGETHER WITH

OCCASIONAL BOTANICAL NOTICES AND INFORMATION.

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BY

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# TWO SCIENTIFIC BOTANICAL NOTICES,

BY THE LATE

## DR. HENRY MERTENS,

NATURALIST ON BOARD THE SINIAVIN, CAPT. V. LUTKENS, BOUND ON A RUSSIAN VOYAGE OF DISCOVERY;

WRITTEN AT KAMTSCHATCHA, IN OCTOBER 1827:

THE FIRST CONTAINING

## AN ACCOUNT OF VARIOUS SPECIES OF FUCI;

THE SECOND DETAILING

## AN EXCURSION TO THE TOP OF THE WERSTOVOI,

AT NEW ARCHANGEL, IN NORFOLK SOUND.

[*Extracted from the " Linnæa," a Botanical Journal, conducted by D. F. L. Von Schlechtendal. Vol. IV. January* 1829.]

"We met with *Fucus pyriferus*, for the first time, near Falkland Islands: it thence was seen in greater abundance as we approached the stormy latitudes of Cape Horn, diminishing, however, in frequency with the increased distance from land, and occurring in the greatest plenty as we steered along the coast of Chili. The waves of the sea carried it past our vessel in large masses, like floating islands, which were sometimes even covered with aquatic birds. At the Bay of Conception, this plant encumbered the shores, becoming rarer about Valparaiso, and I think to have seen it for the last time when we left this coast, which is very poor in marine productions. Knowing that the *Fucus pyriferus* is mentioned by authors as a native only of the Southern Hemisphere, I was surprised to meet with it again on the North-west Coast of America.* The whole of Norfolk Sound is filled with it, and it grows upon all the islands;

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* I have myself found this *Fucus* among marine rejectamenta in the Bay of St. Francisco, New California, situated in 37° 48′ N. latitude. (*Chamisso.*)

occurring, though in less profusion, at Unalaschka, and not appearing at all on the islands to the eastward of the Aleutian, nor on the more northerly island of St. George. Not a single sea-weed was to be seen on the shores of the Matweis Island. I was enabled by some specimens which I collected on the strand of Sitcha, to ascertain the nature of the fructification in this group of *Fuci;* it is situated, as a cristate portion of the leafy substance, immediately above the vesicle, which is distinguished by its darker colour: the root is precisely that of a *Laminaria.*

" Among the rejectamenta of the sea, another gigantic *Fucus** occurs, both in the Bays of Conception and Valparaiso, and equally plentiful at either place; but I cannot determine it with certainty. A much-branched root, similar to what we see in *Fucus saccharinus, esculentus,* &c. produces a round stipes, extending to some feet in length, and of the equal diameter throughout of 1½ inch. Its substance consists of wide irregularly-sized cells, filled with a thick gelatinous mass. This stipes expands into a frond, 2–5 feet broad, and above an inch thick; ramifying, frequently, into long, at first flattish, but afterwards rounder thongs, or to speak more correctly, cord-like twigs, which measure nearly 30 feet, and terminate in almost thready points. The stipes and frond assume, in drying, the consistency of leather; but the twigs, which, when fresh may be even braided together, when exposed to the influence of the parching heat of Chili, snap like glass, even when the greatest care is used in handling them. I have with difficulty preserved some specimens in a tolerable state. This sea-weed forms a favourite article of food with the poorer classes of Chilenos, who prepare a savoury soup from it. It has nothing in common with *F. digitatus;* nor do I venture to place it among the *Laminariæ,* though even *F. buccinalis* has been arranged there.

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* *Fucus antarcticus* (Chamisso in Choris' Voyage Pittoresque Traversée de Cronstadt au Chili, p. 7. t. 7.) Bot. Zeitung, Fl. Apr. 1823:—*D'Urvillea utilis,* of Bory de St. Vincent. (*Chamisso.*)

" Norfolk Sound, which I may call the Bantry Bay of the North-West coast of America, is equally rich in beautiful *Fuci* as in rare and remarkable marine animals of every family; and I doubt if a more delightful strand for sea-weeds is to be found. The variety of species equals the number in which they occur. Of the known kinds I only cite the following from a momentary recollection: *F. tomentosus, floccosus, Larix, herbaceus, asplenioides, costatus, punctatus, ulvoides, saccatus,* &c. I here saw *F. vesiculosus* again, in the greatest plenty, but growing only on stones, and varying from the European plant, by producing no vesicles, which at first induced me to look upon it as a variety of *F. ceranoides.* The Kalosches eat the lower part of its stipes, both raw and cooked: I have tried it in the fresh state, but could perceive no peculiar flavour. *F. esculentus* and *saccharinus* are plentiful, and both of them are eaten, as is *F. edulis,* which is chiefly collected for winter store. *F. costatus* is certainly not recognisable from Turner's figure; it is of a firmer substance than *digitatus,* attaining the length and breadth of *saccharinus,* whose various forms it commonly assumes. The fructification is in roundish protuberances, which commence in a broad lower part of the base of the frond, and terminate towards the middle of the same point, running along both sides of the ribs. The various occupations that filled my hands at Sitcha, would not allow of my paying particular attention to the unknown and perhaps new species which abounded here: one, however, was too remarkable to be passed over in silence, the more so, as it is quite a feature in the appearance of Norfolk Sound. A root, ramified in the manner of the *Laminarias,* produces a stipes, like packthread, and everywhere of uniform thickness, about 2 or 3 feet long, and suddenly swelling at the end into a perfectly round, large, bladder nut. The upper portion of this hemispherical body bears a tuft of geminate leaves, mostly rising on five peduncles: but in the division of these peduncles, there never exists such a symmetry as that the fifth is found exactly in the centre and opposite to the point of insertion of the stipes at the vesicle; rather, there were 3 on one side, and 2 only on the other. In some rare instances, I noticed but 4 leaf-stems, 2 on either side. The summit of the vesicle always presented an open space: the leaves are lanceolate, sharply attenuated at both extremities, their substance like the frond of *F. Phyllitis*, about 1½ to 2 feet long, and measuring 2 inches in their greatest breadth; some longitudinal nerves appear, of uncertain number, running from the base of the leaf to the middle, where they are lost in the substance. Such is the configuration of this *Fucus* in a young state; when older it alters so as to be scarcely recognisable, and then only acquires that remarkable appendage, which I before alluded to, and which I shall now proceed to explain. In advanced age, the stipes becomes immensely long, without, however, increasing proportionably in thickness; for whilst it remains at the base of the stoutness of packthread, its diameter, at 10 or 15 fathoms distance, scarcely measures 2½ lines. Gradually, the vesicle changes into a turnep-shaped, or retort-like cylinder, more than a fathom long, measuring, at its broadest dimension that supports the leaf near the end, 4–6 inches and even more, in diameter, while the lower end gradually and quite imperceptibly loses itself in the stipes. The formation of the frond keeps an equally gradual advance: the leaves described above are numerously divided in their length, the nerves of the young leaves indicating their future points of separation. Entangled at their bases by matting together, these attain a very great length and an equal increase of breadth; the tuft now covering an immense surface with its crowded masses. In one specimen, by no means the largest, which I examined, I calculated that there were upwards of 50 leaves, each 27 feet long. The Russians call this *Fucus*, (to which I had previously given the specific name of *Lutkeanus*, in honour of our worthy Commander, who daily shows himself more zealous in favouring our Natural History labours,) *See Otter Kohl*, or the Sea Otter's Cabbage. The valuable animal, *Lutra marina*, makes particular choice of this sea-weed, as its favourite refuge and residence; delighting to rock and sleep on the long cylindrical bladders, which, like enormous sea-serpents, float on the surface of the water, and individually sweep between the little islands, rendering the channels impassable, even for boats. From the information that I collected from various Russians and Aleutians concerning its duration, this *Fucus* is annual. In autumn it is cast in great quantities on shore by the then prevalent storms, where it soon decays, and in spring not the least trace of it is to be seen. The Aleutians employ the stipes, which is said sometimes to be 45 fathoms long, for fishing-lines:* I purchased one of them. I once saw the Kadiakensers, in Sitcha, make use of the cylinder as a siphon, for pumping the water out of their Beidarkas; an use to which it is well known that the *F. buccinalis* is often applied at the Cape of Good Hope. Owing to the moist climate of Sitcha, the drying of this sea-weed is attended with considerable difficulty. I hardly ever succeeded in preserving a tolerable specimen of the cylinder or bladder, though I bestowed much pains and labour on the operation, for this part generally dissolves completely, or if dried, the leaves then become brittle as glass, and fall to pieces with the slightest touch. The opening of the bladder and discharging the water which it uniformly contains, only hastens the process of decomposition: though the bladders of *F. pyriferus*, if similarly treated, always dried quickly and well. I have preserved some young specimens in spirits. The fructification of this *Fucus* consists in dark-coloured, more or less elongated spots, irregularly scattered in the substance of the leaves. In the Bay of Illulak I only saw it in one place, and never again afterwards.

"I was not able to find *Fucus Menziesii* at Norfolk Sound, though I repeatedly sought for it. Many of the sea-weeds which I had observed at Sitcha, appeared again at Unalaschka: those with perforated fronds seemed to be the most interesting kinds. Here I first saw the beautiful *Fucus Clathrus*, which Agardh, in 1821, placed in the list *Specierum inquirendarum*, although he had before him the specimens that Chamisso had brought home. The Botanist will derive no more information respecting this interesting *Fucus* from Agardh's subsequent work, published three years after, in which he simply says, '*Fucus Clathrus*, lamina stipitata ecostata cribrosa spiraliter involuta." The ocean hardly boasts a more beautiful production than this: it is generally about the height of a man, very bushy and branched, each branch bearing a broad leaf at its extremity, which unfolds spirally, and by this gradual development produces the stipes with its branches and lateral divisions. A spiral border, wound round the stipes, indicates the growth of the frond. The frond presents a large, convex, bent lamella, without nerves; or to a certain degree a leaf, of which one-half is wanting, for the stipes may be considered as a central nerve. A number of rather long narrow perforations, arranged in a radiate form, give the frond the appearance of a cut fan; these foramina being coeval with the formation of the frond, and apparently not owing to inequalities of substance, as Turner thinks is the case in *F. Agarum*. At first, these foramina, which are situated near the stipes, and where the frond is bent in, are round, and have their margins turned outwards; but by the subsequent growth of the frond, they become longer, and their margins disappear; in the middle of the frond they are like true clefts, but nearer the margins, from the greater development of the leafy substance, they are more contracted in their breadth, and therefore seem round. The frond has a complete and entire margin, but is frequently torn; its substance is coriaceous. I have never detected any fructification. The root resembles that of the larger *Laminarias*, but is more woody. This *Fucus* is very plentiful in the Bay of Illulak, and round the whole island of Amaknak. It clothes the rocky shore, like a thick hedge, for a space of 60 or 80 feet, forming, at a little distance, a very pleasing feature in the scenery. Its stalk is often adorned with the elegant *Fucus asplenioides*, which is nowhere found more luxuriant and perfect; in the Bay of Awatscha it is less numerous, smaller, and not so much ramified.

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* We saw these fishing-lines at Unalaschka, but had no opportunity of examining the *Fucus* which produced them. (*Chamisso.*)

"Besides the curious *Fucus* just described, I also possess three other species with perforated fronds, quite distinct from one another: but from the quotations in Turner and Agardh, it is impossible to ascertain which of them is really the plant that Gmelin, (whose work, alas! I cannot here examine,) originally named *F. Agarum;* a single glance at Gmelin's figures, however indifferent these might be, would clear up the point, so unlike one another are these species, even at first sight. All three are inhabitants of the coast of Kamtschatka; at Unalaschka I remarked only one of them, and on other coasts I did not see any of this family. The most beautiful, which is at the same time the largest and most frequent at Unalaschka, I was obliged to look upon as *Fucus Agarum*,* though I cannot conceive how Turner could give so bad a figure; at Kamtschatka I only saw the species represented in the *Historia Fucorum*, although the resemblance there is far from perfect. Some circumstances in Turner's and Agardh's descriptions lead me to suppose, that this is the true *F. Agarum, t.* 32, and that the former author figured, under that name, a plant which I shall quote farther on, as *F. cribrosus*, n. sp. The stipes, rising from a strong, ramified root, 2–3 inches long, presenting a semi-spiral twist, 3 lines broad and 2 lines thick, almost suddenly stretches into a nerve, an inch in width, which runs through the frond, 2 or 2½ feet long. The form which the frond describes, is generally oval; only as the substance of the leaf, from the nerve towards the margin, increases very considerably in bulk, so the form becomes indistinct, owing to the folds and sinuosities thereby occasioned. The proportion between the length of the half margin of the frond, and that of the nerve, is about 1 to 7; for instance, in a specimen, of which the nerve measured 18 inches, the length of the margin, from the base of the nerve to its termination, was 10 feet and even more. The whole of the frond is perforated with a number of generally almost circular, irregularly placed holes; varying in diameter from a line to an inch. In most instances, these foramina are larger, the nearer they are to the nerve; and in that situation, their margin is mostly undulated, so as to have a crenulated appearance. This circumstance gives the frond a very pretty and characteristic aspect; which the other species do not possess. The margin of the leaf is perfectly entire, neither serrated nor waved, its whole consistency very firm, and almost cartilaginous. The second *Fucus* of this family, which may certainly be referred to Turner's figure, I have called *F. cribrosus.* It differs essentially from the former individual, and, in general, scarcely attains a third of the size. The frond is even, scarcely waved at all, and nearly as membranous as an *Ulva:* its form is oval-lanceolate, somewhat cordate at the base. The whole frond, properly speaking, is perforated like a sieve; the holes, which are more or less round, present but little difference in their size, the largest being about 3 or 4 lines in diameter. There is nothing of that crenulated appearance in the margin which marks the preceding species. The younger holes, situated nearest to the base, are peculiar in having their margins alternately directed to one or other side of the frond; the nerve, which at first is somewhat broader towards the middle of the leaf, is very narrow at its base, even slenderer than the stem, which has the uniform thickness of twine, and is about 2½ inches long. I saw this species frequently clothed with a web-like, new, and undescribed *Sertularia.* It occurs in the Bay of Awatscha only.

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* "Correctly so." *Professor Mertens.*

" Lastly, the third species, which I have called *F. pertusus*, differs from the two others in its perforations not appearing at first: for instance, at the base of the fronds, instead of holes, we there observe only small cavities, and bladder-like protuberances, in which the substance of the leaf is afterwards seen to be wanting, and which finally form the circular, though more or less distorted, foramens. Similar protuberances and hollows cover the whole frond between the holes. In the form of the frond it probably bears some affinity to the first species, but the imperfect specimens which I have hitherto found do not enable me to prove it. The substance is exactly analogous to a cabbage-leaf, and there is some resemblance in the inequalities of its upper surface. The Harbour of St. Peter and St. Paul is the only station that I remarked for this plant, where it is one of the species most abundantly thrown up at this season of the year.

"In the environs of Illulak I found many and very singular varieties of *Fucus esculentus:* Unalaschka being, as it were, the central point in the range of this species. In some individuals, the fronds were unusually broad, even resembling the foliage of the *Banana;** and, like them, there were long lacerations in their substance, caused by the violence of the waves: the nerve, in this variety, was round and homogeneous; in another form, it was very broad and decidedly quadrangular, besides being hollow and nearly compressed at intervals, so as to assume an almost jointed appearance: the frond was also generally very narrow, frequently only like a bordered fringe to the nerve; in another variety it assumed a spirally twisted form. The fruit-bearing pinna also was very polymorphous; sometimes quite round, frequently oval, and occasionally acute on both sides. The extremes of these aspects were most dissimilar, though connected by such gradually intermediate gradations, that it was impossible to say where one ended and another began. The Kamtschatkan specimens are all remarkable for the smallness of the fructiferous pinna. The Bay of Awatscha at Kamtschatka, though generally poor in marine productions, yet afforded me, besides all the kinds above noticed, many other interesting species, some of which are decidedly new. One of them is a *Laminaria*, its frond is simple and like a ribband, frequently a fathom in length, nerveless, with a spathulate base, of which the auricles are turned and twisted inwards, on which account I have given to this species the name of *F. Cornucopiæ*. The stipites, of which two spring from each root, ascend in opposite directions, and strike down a few fibres from their under-side; soon after, each stipes expands into the spathule that I have described. This *Laminaria*, which comes nearest to *L. saccharina*, can neither be confounded with it, nor with any other: it always grows singly; though the roots of six or eight individuals are often so interwoven, that they cannot be easily separated. Perhaps the *F. bifidus*, Gmelin, is but an imperfect and ill-described specimen of this plant.

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* The *Fucus esculentus* certainly bears a striking resemblance to the leaves of the *Banana.* When the Rurik, in the spring of 1817, was entering the harbour of Unalaschka, our friend Kadu from Ulea stood by my side on the quarter-deck, gazing silently at the new country to which we were taking him: its mournfully barren shores, its heights covered with snow. But when he saw this *Fucus* floating round the vessel, he hastily caught my hand, and exclaimed with rapture, "Kaibaran! Kaibaran!" (Bananas, Bananas!) Reluctantly undeceived, he soon afterwards, when we landed, begged that I would plant some of the *Cocoas* which he had with him, to supply future food for the people. (*Chamisso.*)

" A second, hitherto undescribed and no less rare species on the coast of Kamtschatka, is completely spongy, and might, at first view, be taken for a *Spongia;* but a slight examination of its internal structure removes all doubt of its vegetable or fucoid nature. It may rank near *F. tomentosus*, and consequently belongs to the genus *Codium* of Agardh: I have provisionally called it *F. damæcornis;* the sessile and variously divided frond, cut in many irregular segments to the very base, each segment being again digitate and lobed, gives it a resemblance to the anthers of a fallow-deer. This sea-weed is chiefly found growing on the stems of *F. Clathrus;* its colour is a brownish purple, and its touch and appearance resemble Manchester velvet. The circle which a single frond describes often exceeds a foot; its thickness is about a line; and when cut through, there appear many yellow granules, filled with a fluid, imbedded among fibres. This species dries very readily, contrary to expectation, and in doing so, exhales no unpleasant odour.

" The third new species which I shall enumerate, is here found very plentifully, though good specimens are rare; Turner mentions it in his *Historia Fucorum*, though both his figure and description leave many points in doubt, as the Kamtschatkan form of *F. saccatus*. Agardh quotes this form as the original and true appearance of *F. saccatus*, from which, however, it is very different, the latter being plentiful both in Norfolk Sound and here. I say nothing of the aspect of the plant, which Agardh has tolerably well described; but shall only state that the internal substance of the two is perfectly heterogeneous. In the American species, the sack is round, the membrane which constitutes it very thin; and if this sack be full of sea-water, the contents, on its being pressed with the finger, escape forcibly through a number of pores on all sides: while in most of the individuals which occur here, the sack collapses laterally like parchment, and the little water which it contains is not sent out to any distance by compression. The colour of the sack in this kind is always red.

"I must here take notice of another species, most nearly related to the first; in which the base of the sack is prolonged into a point, whilst in the other kinds it is constantly rounded off. I found the American species only on *F. vesiculosus*, which occasionally grows here on such stones as are periodically washed by the tides. To conclude, I farther mention that at Sitcha, I gathered still another saccate kind, inhabiting *F. Larix*. I am, however, yet doubtful if it properly belongs to the *Fuci*, as its sack shows a tendency to pass into a gelatinous membrane. *F. digitatus* occurs here in various shapes; a dozen different aspects of it now lie before me, which merge imperceptibly into one another. Whether Agardh's species, *Laminaria reniformis, brevipes*, and even *Belvisii*, have been accurately examined, is doubtful. The fructification is in darker, more elevated, and sinuated portions of the frond. The *F. evanescens*, Agardh, which Chamisso gathered here, I can consider as nothing more than a variety of *F. vesiculosus*, although it is the only *Fucus* occurring here of this form. I have sought everywhere, and in vain, for *F. Myrica;* and I am still doubtful as to *F. crinitus*."

# SECOND EXTRACT;

*Containing the Account of an Excursion made by Dr.* H. Mertens, *to the summit of the Werstovoi at New Archangel, in Norfolk Sound:—from a Letter addressed to a friend at St. Petersburg.*

## PREFATORY REMARKS BY ADRIAN VON CHAMISSO.

" Norfolk Sound (called Sitka or Sitcha by the Russians), of whose luxuriant vegetation this learned Naturalist here displays to our view a striking portrait, is situated in the 57th degree of north latitude, on the north-west coast of America, to the eastward of that extensive gulf formed by this part of the continent; which, again, under the 60th degree N. lat. stretches in an opposite direction westerly, being changed by a great volcanic mountain, and then prolongs itself further W.S.W. to the Peninsula Alaschka and the chain of Aleutian Islands. At the west of Norfolk Sound, a space of 4000 miles in breadth (calculating 60 to each Equatorial degree) extends between the American and the opposite Asiatic shore: interrupted only by the above-mentioned tongue of land of Alaschka. If we compare the lofty forests of Sitcha with the wintry coasts of Kamtschatka, where 4° more southerly, at St. Peter and Paul, the birch only attempts to rise into a kind of tree, we shall here find a confirmation of that law which proves, by comparing the climates of Lisbon and Philadelphia, Paris and Quebec, England and Labrador, Drontheim and Iceland, that countries, situated to the east of the sea, possess a milder temperature than those which are placed on the west of the ocean. This theory fully explains the facts. The sea is the great equalizer of temperature: just as the east winds always blow between the tropics, so do the westerly winds predominate in a higher latitude. These confer on the western shores of the continent to which they arrive, wafted over a warm sea, a milder winter; and, on the contrary, a severer one to those which they reach across a cold and snow-covered continent. The sea-breeze, that conveys warmth in winter to the north of Europe, has first, as a land-wind from Greenland, carried cold to the island of Iceland; and the collating of meteorological observations proves indeed that an opposite state of temperature takes place in Iceland and in the north of Europe; so that our colder winters and colder months answer to milder winters and months in Iceland, and *vice versa.* But Europe is favoured above all the countries situated under the same degree of latitude. It forms the western border of the continent to which it belongs: the gulf-stream bears into the eastern portion of the Atlantic Ocean a body of waters, warm from tropical latitudes; while the continent of Africa, lying in a position with respect to Europe which in other parts of the world is held by cooling seas, heats the air which thence floats, in the upper regions of the atmosphere, from the Equator towards the Pole. The south winds, those currents of the lower strata of African atmosphere, with their glowing influence, adorn the northern skirts of the Mediterranean with the productions of the Tropics, so that the palms are even seen extending beyond the 43° N. latitude. These are among the most evident, though not perhaps the most decided proofs of the advantages which Europe enjoys as to climate. The sea-winds may not be the sole vehicle for the conveyance of heat with which our northern districts are favoured; for, according to Wahlenberg, the mean temperature of northern Europe is lower than that of the earth. Under the 46° N. lat., an equalization takes place between them; and more northerly the first decreases quicker than the other. In the north of Europe, towards the 71° N. lat., springs and winter-flowing brooks may be seen, the ground does not freeze beneath its covering of snow, and the frost never penetrates into well-protected cellars. To the north of Behring's Straits, on the contrary, the earth never thaws, nor even at the Polar Circle in Kotzebue's Sound; it is found everywhere hard frozen, a few inches below the growth of vegetation; while under that crust, and below a very thin layer of clay, the ice may be seen in places having nothing in common with the glaciers of our own country. The Esquimaux, being unable to break the ground for the purpose of interring their dead in mother earth, lay the bodies flat on the ground, piling drift-wood above them, and placing blocks of stone on the top, to protect them from beasts of prey. The Tschuktschi, on the coast of Asia, burn their dead.

"If we collect, examine, and compare the accounts of the northern line of coast in Asia and America, the descriptions of these arctic regions will be found to agree, in all essential particulars, with what we have ourselves witnessed at Behring's Straits. The ground is everywhere frozen, and beneath the scanty verdure which sometimes clothes the soil, the ice is frequently as hard as a rock." *

"In the belief that a description of a spot which is remarkable for its botanical productions will prove more interesting to you than a whole sheetful of promises and assurances of regard, I proceed to conduct you, without farther preface, to Norfolk Sound, a place which is rich in every kind of natural beauty; and I beg leave to accompany you in an excursion from the sea-coast to the summit of the Werstovoi. By this means I hope to succeed in giving you a general idea of the vegetation of the environs of New Archangel. As it was quite low tide when we landed, we were obliged to walk for some distance over the stony spots which, at high water, are covered by the sea. A particular state of *Fucus vesiculosus* covers the sharp stones with an olive-green, moss-like covering; and by its slipperiness renders walking unpleasant: the singular *F. saccatus* was also seen here and there, while *F. ulvoides* and *F. punctatus* appeared in plenty, like red lobes woven into the green mat. Where the water stood between some of the stones, we were sure of meeting with the beautiful *F. floccosus;* and in similar situations *F. Larix* prevailed, covered with a new species, probably belonging to the *saccatus* tribe. *F. mammillosus* and *gigartinus* were not rare. On small insulated stones, grows a long intestinal *Ulva;* but *F. asplenioides* particularly attracted our attention by its lovely colours; while *F. herbaceus* lay stretched on this red ground, as if ready for the herbarium, displaying its peculiar, lettuce-like, uniform green hue. Nearer the land, you reach the boundary marked by the occasional overflowing of the sea; it is distinguished by a belt of marine plants, from which I only selected *F. Lutkeanus* (n. sp.), *F. costatus, saccharinus, esculentus,* and here and there *F. edulis.* We here leave the district of the sea, and proceed, for a time, along the proper strand. *Arenaria peploides, Glaux maritima,* some creeping-rooted *Carices,* and a *Juncus* which seems to hold the place of our *maritimus,* are perhaps the first Phanerogamic Plants that occur. A few steps inland, the *Veronica serpyllifolia,* mingled generally with *V. Anagallis,* is seen growing close to the ground. This is likewise the habitat of *Potentilla anserina* and *ruthenica;* under them occurs, here and there, a very pretty small *Sisyrinchium,* glittering with beautiful blue flowers. Even at a distance, two *Plantagines* and a *Triglochin* are distinguishable from the plants already mentioned, by the peculiar hue of their green. Between these, the lovely *Dodecatheon* generally delights to grow, and in some spots a *Pedicularis* (*asplenifolia?*). But the most numerous plants on this strand are certainly an *Elymus,* that produces a most remarkable spike, and a *Bartsia,** with yellow flowers, often growing two feet high. Large individual stones are covered with a particularly beautiful *Potentilla;* among the crevices of these stones grows a most lovely *Campanula,* with large blue bells; while a three-leaved umbelliferous plant, and a *Selinum,* as it appears (here called *Petruschka*), delights in similar situations. But in the shade of masses of stone, particularly inland, towards the forests, are found two species of *Angelica* and *Heracleum*, on which I am unable to decide. Among them the *Sarana** and *Fritillaria* are frequently seen. *Pisum maritimum*, *Cochlearia danica*, *Ranunculus acris*, *Galium boreale*, *Geum intermedium*, a *Rumex*, *Turritis hirsuta* and *glabra*, and a *Cardamine*, are also not uncommon. But I will detain you no longer from the forest, towards which, if you enter into my feelings, you must already have cast many a glance, and along whose border we proceeded with some difficulty, bending under branches of trees and climbing over colossal trunks, which frequently impeded the path. But farther it was impossible to penetrate; the high tide reaches the gigantic inhabitants of the forest, and we were compelled to proceed along the boarded path which the enterprising Governor Baranow formed for his own daily walking, and which is in part kept up by his successors. I dare not take you immediately into the thicket, you will be fatigued by the frequent and vain attempt to penetrate through, and thus lose the strength which is requisite for the farther prosecution of our excursion: and this labour would take away all power of enjoyment. Meantime, let us examine a little the general aspect of the Forest. It principally consists of two kinds of *Fir*: of which the species are not correctly determined. The Russians, who inhabit Sitcha, call one of them the *Pine* (*Yely* or *Jelj*), the other the *Larch* (*Listwenj*), though neither bears the least similarity to the trees which are thus named in Russia. Both are referrible to Michaux's genus *Abies*. The *Pine*, as it is called, seems to me analogous to the North American *Pine* (*Pinus balsamea*). Both of these trees must be peculiarly eligible for masts, and building-timber, in general, as they attain an immense height; yet the wood of the *Pine* is not much prized. It is said to be of short duration; that of the *Larch*, as it is called, lasts much longer. Besides these trees, a particularly beautiful balsamic-scented *Alder*, here called the *White Alder*, grows on the skirts of the forest, with a *Cratægus*, now ornamented with its large flowers, and a *Sorbus*, of which the fruit is already set. In the underwood, the *Rubus odoratus* (*R. Nutkanus*) abounds, which is seen in our Europæan gardens; but here it has only white flowers, and produces no fruit. *Mimulus guttatus* encircles the wood, and is nowhere found in greater luxuriance. Now, we have at length reached the much-wished for path, and you will soon find yourself in the heart of these immense forests, among trees, the grandeur of whose massy trunks you never imagined before. The axe scarcely ever echoed in these woods; indeed, the surrounding wilderness is immense, and strikes the beholder with a feeling of horror. For centuries, these trees have never fallen but under the weight of years; and their mouldering remains give rise, without alteration of form, to future generations of trees: again to flourish and again to die! Nevertheless, the abundance of shrubs, herbs, and mosses, which clothe these hoary forests, and rise over the natural graves of their former denizens, impart to the scenery an air of vigour and of youth. Beneath the hills thus formed are dangerous hollows, into which the feet sink among the relics of accumulated years, deceitfully covered, as they are, by a new growth of herbs and Cryptogamic plants. Here are two different species of *Claytonia*, one with red, the other with white flowers: the latter reminded me of our *Cerastium aquaticum*. A *Maianthemum*, with larger inflorescence than that of our country, abounds here everywhere. *Cornus suecica* produces such luxuriant blossoms that it might be mistaken for *C. florida*. *Pyrola uniflora* is plentiful, and *Dalibarda fragarioides* creeps over the decayed stems. A *Calla* (*Dracontium Kamtschaticum*), whose spatha rivals that of *C. æthiopica*, and with zebra-striped foliage, springs up in damp places. The commonest shrub is the large frutescent *Azalea;* mingled with *Rubus spectabilis*, glowing with flowers and fruit. Two species of *Ribes*, one resembling our *R. rubrum*, and the other *R. nigrum*, are equally beautiful. A *Sedge*, similar to our *Carex Buxbaumii*, is here a particular ornament to the woods; while a *Streptopus* holds the place of our *Convallaria multiflora*, and both the *Trientalis* and *Linnæa* are as abundant as in the woods of Germany. I observed a *Malaxis*, with green and red flowers, and a *Cymbidium*, whose form recalls that of *Corallorhiza*, with *Lathræa Stelleri*, were seen in damp spots. A *Vaccinium*, of which the fruit is daily served up like *Bilberries*, occurs at almost every step. Suddenly the rushing noise of a river breaks on the ear, and a different scene is opened to view. The copious waters seem to expand before you, as the surges of the wild mountain-current roll through their native forests; the banks graced with a totally dissimilar vegetation from what has hitherto prevailed, though the larger trees appear to be the same. Here alone is seen the solitary species of *Salix* which the environs of Sitcha afford; it resembles *acuminata* of Hoffm., yet looks as if distinct. But *Aquilegia Canadensis*, a new *Spiræa*, a *Sonchus*, with flesh-coloured flowers, a *Doronicum*, the beautiful *Epilobium*, a bulbiferous *Poa*, like *P. bulbosa* but two or three feet high, an *Elymus*, that holds the place of our *E. arenarius*, and a lovely *Luzula*, are representatives of plants scarcely before noticed. Here are three or four *Saxifrages*, a *Rumex*, similar to *R. digynus*, and a beautiful *Arabis*, which grows among naked stones in the river. *Epilobium montanum*, *obscurum*, or *tetragonum*, an *Aconite*, and some *Stellariæ*, increase the number and variety of species. Various *Ferns*, which are, however, types of those which prevail with us, grow in great luxuriance. The opposite side of the river wears a similar garb, the wood being the same, only even thicker. But the *Panax horridum*, which had hitherto been met with only here and there, as a little shrub, soon gives to the country a peculiar character; growing in great luxuriance, and in every respect assuming the form of the tropical *Cecropias*. It is difficult to wind through the underwood which it sometimes exclusively forms: sometimes it takes the creeping position, at other times it rises like a *Palm*, and spreads out its broad and umbraculiorm leaves. It is fortunate that the prickles, although numerous and sharp, are tender, being only attached to the epidermis of the plant; so that when the hand is covered with a good glove, it is easy to grasp it boldly, particularly the older stems. A *Saxifraga*, perhaps *Pennsylvanica*, grows on fallen trunks of trees in remarkable luxuriance. At last, by degrees, we reach the foot of the mountain, and commence its ascent; this is truly a work of labour, attended by no small difficulties, which I shall endeavour to describe, and thus aid you to surmount. On the little hills at the base grow *Epilobium alpinum*, and the smaller bushes already noticed. The constantly wet ground (for it rains here almost throughout the year) adds considerably to the unpleasantness of walking: for it yields under the traveller's feet; and if you attempt to climb up by the fallen stems, or to support yourself ever so gently upon one of them, the whole of the mossy bark will frequently strip off from it, and betray you into a fall. Besides, the mountain is, in many places, very steep, and the wood almost impenetrably dense. Happy will you here be if you can detect a gulley, in which a current runs down; though the steepness of its declivities frequently obliges you to return. Though the vegetation is everywhere much alike, yet here the trees become thinner, and the proper region of the *Panax* commences. We had even descried, when out at sea, these clearer spots in the dark *Pine* forests, and mistook them for broad-leaved trees. It is true that in such places the lofty stems of an *Alder*, here called the *Red Alder*, and destitute of balsamic scent, were seen singly scattered among the surrounding shrubs of *Panax*. But the wood which now appears again, in increased denseness, before us, consists particularly of a noble *Thuja*, called, on account of its agreeably scented wood, *Duschnik*, also *Duschnoie derewo* (*scent-wood*). It is the timber most valued here. The tree indeed occurs frequently lower down, at the foot of the mountain, and even to the sea: but so scattered that it is necessary to search for it among the more predominant *Pine trees* which conceal it from view; but here it constitutes almost the entire timber, and the *Pine* and *Larch* are seldom seen: the latter, however, not ceasing quite so soon as the former. A *Blechnum*, which we never noticed before, was not unfrequent in this district; *Pyrola secunda* appeared, now and then, with a little *Lycopodium*, and higher up we found a beautiful *Convallaria*, allied to *latifolia*, but distinguished by its red flowers. A yellow-flowering *Viola* occupied large patches of the ground in the now much thinner wood, where we entirely lost sight of the *Panax*, *Rubus*, *Ribes*, with the other shrubs. A few straggling *Vaccinia* and *Azaleas* alone remain; and although the eye should fail to detect it, yet the scent would infallibly betray the existence of a *Valerian*, which grows only at this high elevation. It is allied to our *officinalis*, or perhaps more properly to *V. Phu;* yet it may constitute a distinct species. The smell of the root is pungent, and more powerful than that sold in our apothecaries' shops; the Russians call it *Koloschenskiai Koronj* (*Koloschen root*), because the aborigines of this country hold it in high repute; employing it in almost every complaint, and ascribing to it wonderful medicinal virtues. On account of the great difficulty which attends the gathering of this plant, it is much prized, and the Kaloschans are very unwilling to barter their whole stock of it. Here we first saw the singular *Pyrola* * of Eschscholtz, which I had begun to despair of finding: but it was only in bud, a few flowers appearing in some sunny situations, while the former year's fruit might be seen along with the young leaves. The wood is hereabout very thinly scattered: the *Thuja* is of stinted growth, and a *Pinus*, very similar to our *P. Mughos*, appears associated with it. This species, which the people call *Tanne* (*Sosna*), is usually of low growth, and may also be found in the less elevated spots, not among the woods, but growing in turf moors.

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* At the mouth of the Lena and Mackenzie Rivers, what may be reckoned as the tertiary formation contains *Mammalia* of the antediluvian world. In confirmation of this fact, we here only allude to Gmelin (*Fl. Sib. Præf.*), Adams, Wrangel, Mackenzie, Franklin, Georgi (*Beschreib. des Russ. Reiches* 3. 1. B. p. 20.), though more authorities might be quoted.

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* Probably our *Castilleja pallida β. unalaschensis,* Linn. II. p. 581. (*Ad. v. Chamisso.*)

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* *Lilium Kamtschatkense*, L.—The state of this plant that occurs at Unalaschka, and which we suppose to be that of America, differs materially from the Kamtschatkan species, and is probably a peculiar one, *Lilium quadrifoliatum* of Meyer, in *Reliq. Hænkeanæ*, *Fasc. II. p.* 126. (*Chamisso.*)

"But now again we are come to a difficult place, and we reach the first cross. It is not safe to cling to the plants of *Empetrum;* a better hold is afforded by the *Pyrola*, which strikes root among high stones. At this increased elevation, a new vegetation presents itself. The ground is thickly covered with *Andromeda tetragona*, and another species which I propose to call *empetrifolia ;* a *Menziesia*, with green flowers, appears among these, and the stones are clothed with a tufted creeping *Saxifrage*, similar to *S. Sternbergii.* In the vicinity of the snow, which here covers large tracts, grow a peculiar *Dodecatheon*, and a *Menyanthes* with reniform leaves, which I had observed much larger in the half-dried swamps below. A delightful *Aster* reminded me of the *Amellus* of our country; *Geum montanum* (?), *Andromeda polifolia*, *Empetrum nigrum*, and, hidden among these, *Coptis trifoliata*, *Azalea procumbens*, some alpine *Grasses*, and vernal *Carices ;* these complete the picture of this region: a picture, certainly, which is equally characteristic of the summits of many mountains of similar elevation. But ascending yet higher, and coming to the last cross, we shall find a spacious meadow, adorned with a large *Anemone*, a red-flowered *Bartsia*, an alpine *Ranunculus*, aud many of the plants before enumerated. The shrubby *Pine woods* have altogether ceased here; as well as a kind of shrub, which is generally confined to the tops of mountains, and which I omitted to notice in its proper place. This species seems to have altogether escaped the notice of the inhabitants of Sitcha; none, to whom I showed it, seemed to be acquainted with it. It is an exceedingly beautiful, thickly growing shrub, not described, at least, in *Sprengel's Systema*, with small obovate leaves, of the same colour on both sides.

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* Fruticosa, ramosissima, habitu *Azaleæ* aut *Menziesiæ*.

"Thus I have led you, in description, to the place at which all who have hitherto ascended this mountain, pause, and begin to return: but farther on is the naked rocky summit, which I cannot help inviting you to climb with me. To do so, we must certainly descend a considerable way; but among the snow we shall be likely to find some handsome alpine plants. We slide down, therefore, on the snowy fields, and soon reach the foot of the pyramidal point. It is here extremely difficult to proceed among the perfectly naked stones, which, slipping under one's feet, roll down into the deep abyss below. A single false step, an involuntary trust to the projecting point of a loose stone, and the unwary traveller drops into a chasm, which it makes one tremble only to behold. Here and there, a small *Carex* peeps from the chinks of the rock; a graceful *Juncus* and a *Draba* may also be seen. But near as a *Cerastium* may grow, it is dangerous to attempt to cull it. The *Achillæa*, which forms a rather large patch, may be more easily procured. These difficulties being overcome, you at length reach the summit, perhaps bringing a *Pedicularis*, a *Cerastium*, and a new *Saxifrage* with you; but, once on this elevated spot, where scarcely five individuals can find a footing, the piercing cold forbids you to look round; besides, a dense fog envelops this region, preventing the possibility of a prospect; and with benumbed hands, which scarcely grasp the few specimens that you have collected in the ascent, and trembling feet, you commence a descent, the dangers of which are in reality much greater than those which you encounter in gaining the summit. In returning, we will vary our track, and explore the productions of a swampy moor which lies at the foot of the mountain. Here is a lovely little white-flowered *Gentian*, and a *Carex*, which seems identical with *C. microglochin*, and is the most prevailing plant. This day's excursion may perhaps produce twenty to twenty-five *Reed-Grasses;* and a richer collection of larger plants. Among them are *Veratrum album*, *Scirpus multicaulis*, *Eriophorum Scheuchzeri* and *gracile*, *Drosera rotundifolia*, *Vaccinium Oxycoccos*, and *Vitis-idæa*, and a species near to *V. uliginosum*, *Ledum palustre*, *Andromeda latifolia*, a large *Helonias*, a *Myrica*, *Juniperus prostratus*, *Arbutus Uva-ursi*, *Polygonum viviparum;* on the margin of the lake, which it is necessary to skirt here, are also found *Comarum palustre*, *Potamogeton natans*, *Nymphæa lutea*, *Montia fontana*, *Menyanthes trifoliata*, *Hippuris vulgaris*, *Juncus subverticillatus*, and three different *Sanguisorbas*, as also some *Umbellatæ.* We are now, thanks to Providence, near the establishment again. *Isopyrum fumarioides* grows on the stumps of felled trees. At last, between the houses, you have again *Chenopodium album*, *Urtica dioica*, *Matricaria Chamomilla* (its flowers without rays), *Sisymbrium Barbarea*, *Alsine media*, and several common weeds.

“ Now, my dear friend, you have my botanical account of Sitcha: I wish that you may be pleased with it, as I have drawn it up at some cost of time and trouble, in order to prove to you, however inadequately, the gratification that I derive from the remembrance of those happy hours that I was so fortunate as to pass in your company.”

## BIOGRAPHICAL NOTICE

OF THE LATE

## CAPTAIN DUGALD CARMICHAEL, F. L. S.

*By the* Rev. Colin Smith, *Minister of Inverary.*

[*Concluded from p.* 343, *vol.* 2.]

Captain Carmichael returned from the Isle of Bourbon to the Cape of Good Hope with his regiment in the year 1814; and the various success with which he pursued his inquiries into the natural history of the Cape and its neighbouring districts, has been already detailed in the preceding pages. In July, 1815, on a requisition being made by the Earl of Moira, then Governor-General of India, for as many troops as could be spared from the Cape of Good Hope, the 72d regiment was selected for that service, and ordered to proceed for the Peninsula. “ As the call was extremely urgent,” continues Captain Carmichael, “ we were embarked as fast as the vessels could be equipped for us, and each was directed to make the best of her way to Bengal. The Morley transport, carrying the head-quarters of the regiment, and in which I sailed, was the last that cleared Table Bay, and this took place on Sunday the 9th July, 1815.

“ On the parallel of 38°, on which we ran down our longitude, we found the weather uniformly disagreeable. A hazy atmosphere, the horizon circumscribed by a muddy bank of clouds; strong westerly winds, increasing frequently to furious gales; and showers of sleet or hail, with a high tumultuous sea that knew no interval of tranquillity. Such was the weather we experienced during the first three weeks of the voyage. After gazing so long on the blue expanse of the ocean, there is something exhilarating in the aspect even of the most barren and inaccessible rock; and the sight of the gloomy island of St. Paul, obscured as it was by a thick veil of mist, was yet the more welcome to us, as it was the point from which we were to direct our course for a more genial climate.

" Though it was the depth of winter when we made this voyage, and the sky almost constantly overcast, yet the quantity of rain that fell was inconsiderable; we had frequent showers, indeed, but they were neither heavy nor of long continuance. But it is naturally to be expected that the quantity of rain which falls on the sea should bear but a small proportion to that which the sudden variations of temperature, and the inequality and elevation of surface, cause to descend on the solid parts of the globe.

" From the time we left the Cape, until we reached the Island of St. Paul, we were daily surrounded with flocks of ocean-birds, among which I recognized *Diomedea exulans, spadicea,* and *fuliginosa, Procellaria pelagica, gigantea, æquinoctialis,* and *Capensis.* The last of these, known by the name of the *Cape Pintado,* is easily distinguishable from its congeners by the singular variegation of its plumage, and the comparative shortness of its wings.

" What these birds chiefly subsist on, it would be difficult to say; as we could observe no indication in our track of any species of fish likely to serve them as food. They are seen anxiously on the search all day long, never soaring to any height, but skimming close over the surface of the waves. The greediness with which they pick up such offals as happen to float in the wake of ships, is a proof that whatever may be the nature of their ordinary food, its supply is at times precarious.

" One of their articles of temporary resource we had more than once occasion to advert to, the dead carcasses of cetaceous animals. We never passed one of these that we did not observe surrounded by myriads of *Albatrosses* and *Petrels,* gorging themselves on the putrid carrion. While the mountain of corruption was thus attacked from above, the underside was demolished by shoals of sharks, and other ravenous fishes; and their combined efforts never ceased until the weight of the skeleton overmatched the buoyancy of the flesh, when the mangled remnant sunk to the bottom.

" These birds feed occasionally on molluscous animals, which was more than once proved, by inspecting their stomachs, wherein I invariably found the beaks and eyes of a species of *Sepia.* These eyes are of a very singular structure. The crystalline lens, like that of fishes, is of a globular form, but separable into two hemispherical portions, and consists of thick concentric coats of a cartilaginous texture, and beautiful pearly whiteness; the latter the effect, no doubt, of maceration in the bird's stomach.

" From the day we past the 30° degree of latitude, the *Petrels* and *Albatrosses* disappeared, and we saw few birds of any description during the rest of the voyage. The *Flying-fish* began to appear in latitude 28°, and attended us until we arrived in the Ganges. An error with regard to this fish has crept into *Linnæus' System of Nature.* After the specific definition of *Exocœtus volitans,* we meet with the following observation: ' By means of its long pectoral fins, it is able to raise itself out of the water, and suspend itself in the air for a short space, till they become dry, which it does for the purpose of escaping from the jaws of predatory fish; and in its flight it is exposed to the talons of aquatic birds, hovering over the waters to catch it.'

" It is not, I am inclined to believe, by means of its pectoral fins that the *Flying-fish* raises itself out of the water,—but by means of its tail, the only propelling fin with which it, in common with all other fishes, is furnished. The pectoral fins act merely as poises, and during its progress through the water, are disposed close along its sides. In its aerial flight, they sustain it by their mere expansion, in the same manner as we observe many birds, particularly the *Albatrosses,* fly for a length of time without any motion of their wings. When the *Flying-fish* shoots out of the water, it carries both its pectoral and ventral fins expanded to their full stretch, but without the slightest perceptible motion; the original impulse enabling it to prolong its flight to the distance of two or three hundred yards. Sometimes it grazes the crest of a wave, gives two or three strokes with its tail, and flies off again with renewed vigour. Flights of this length are, however, but rarely taken, and but by individuals of full growth; the ordinary flight, when a shoal of them dart up together, seldom exceeding a few yards. With regard to the assertion, that the *Flying-fish* is exposed to the talons of aquatic birds, I have only to observe, that it is rather unusual with aquatic birds to be furnished with talons; but if there are any so provided, I will venture to say that they are not to be found in the latitudes frequented by the *Flying-fish.*

" For some days before we made the land, we were warned by a manifest change in the sea, of our approach towards the head of the Bay of Bengal. From the deep indigo-blue of the ocean, it passed imperceptibly into a dark olive-green. Even in Balasore Road, where we lay for a night at anchor, its colour was the same until about an hour before we weighed anchor next morning, for the purpose of crossing the sand-heads, when we observed it suddenly change to that of burnt brick, approaching in a rapid current from Point Palmyras, and before our anchor was up, the whole Bay, as far as we could see, was of the same colour. This phenomenon was caused by freshes in the River Kannaka descending with the ebb-tide, and diffusing themselves over the Bay.

" We were but a few hours under weigh, when we fell in with a pilot-schooner, from which a pilot was sent on board to take charge of the ship. There are twelve of these vessels under the orders of the Marine Board in Calcutta, several of which constantly ply off the sand-heads, for the purpose of furnishing ships with pilots to conduct them through the intricate navigation of the Hoogly. They are about 150 tons burden, and each of them is commanded by a branch pilot, having under him two masters, four mates, and as many volunteers. The rate of pilotage from the sea to Calcutta is from 100 rupees for a vessel of nine feet draught, to 600 for ships of 23 feet. Foreign vessels are charged double, and for all ships outward-bound there is an additional charge of one-tenth.

"The Sand-Heads are the termination of five or six diverging banks, separated by as many branches of the Hoogly, and forming a submarine Delta, fifty miles in diameter; which is annually enlarged by the spoils of the continent, carried down by that river during the period of its inundation. We sailed in through these banks, along what is termed the Eastern Channel, till we arrived off Saugur Island, where our progress was arrested by the ebb-tide, and we remained for a night at anchor. At this point, the mouth of the river is fifteen miles across, and displays an uniform expanse of muddy water, running at the rate of five miles an hour.

"From the time we passed Saugur, the ship was constantly surrounded with swarms of boats that issued from the creeks and borders of the river, with bread, fish, fruit, eggs (for the most part addled), and a variety of other minor articles. These boats are of a peculiar form, resembling, in some measure, those known on the west-coast of Scotland by the name of Norway skiffs. They consist of a few stout planks of teak, stitched together with the fibres of the cocoa nut; and are plied with a rude sort of oars made of an oval piece of board attached to a shaft of bamboo; the rowers squatted, like so many tailors, on a kind of half deck of loose boards, placed athwart-ships, while the steersman stands on the stern, with a huge oar, which he manages so as to steer and scull the boat at the same time. The whole river is covered with boats of this description, employed in fishing. The nets are stretched across the stream, and suffered to float up and down with the tide, buoyed by means of small calabashes or joints of bamboo.

"Except the awkward form of their boats, and manner of rowing them, I could remark little to discriminate the Bengalees who ply on the Hoogly from the savages of the South Sea Islands, as depicted by our circumnavigators. The most prominent characters of both are similar; a finely proportioned figure, agreeable features, a glossy black skin, strong lank hair, cut in the most fantastic fashion, noisy gabble, lively gesticulation, and almost primeval nudity.

"After we passed Diamond Harbour, the scene became more interesting. The tide usually rises from twenty to twenty-four feet, and the current, during the reflux, runs down at the rate of eight miles an hour. The effect of this prodigious rise and fall, so often repeated, was highly curious. During low-water, the ship floated at the bottom, as it were, of a broad canal, confined by high muddy banks, sloping at an angle of twenty degrees; but at full tide, she was buoyed up above the level of these banks; and we could see the water bursting over them, and inundating the adjacent plains. Over this space were scattered numerous small islands, covered with groves of *Mango-trees*, and of *Palmyra*, and *Cocoa Palms*, shading with their rich foliage the hamlets of the peasantry. The inundated ground bore a crop of rice, the stalk of which growing in proportion as the flood rises, the ear is kept above the surface, and spreads a soft verdure over the plain.

"From this rich and delightful scenery, our eyes were often attracted to objects of a very different nature. When a Hindoo lies at the point of death, his relatives carry him to the bank of the river, where they lay him along, and in order to accelerate his departure, stuff his mouth and nostrils with mud. As soon as he has expired, the body is committed to the stream, where it floats up and down with the tide, until it is either swallowed by an alligator, or runs aground, and becomes a prey to the jackals and vultures.

"This horrible practice, founded on the principles of the Hindoo religion, renders the passage from Diamond Harbour to Calcutta extremely disgusting to Europæans, and entirely destroys the pleasure they are so well disposed to enjoy, after a tedious voyage, in surveying the beauties of the surrounding country. They cannot cast a look upon the passing stream without being shocked at the sight of numberless human bodies bleached by the sun, buoyed up by their own corruption, and devoured by the carrion crows that perch on them as they float along; and should they glance their eye to the banks, it is only to see the kites, vultures, herons, and pariah dogs, actively engaged in the same work. The shades of night relieve the eye from this revolting spectacle, but these no sooner set in than the howlings of the wolves and jackals assail the ear, and announce their approach to partake of the same horrid banquet. A short residence in the country, however, reconciles Europæans to all these objects; and the water of the Hoogly is esteemed by our seamen next to that of the Thames. The natives themselves, it is hardly necessary to say, are so indifferent, that I one day saw a Hindoo washing his mouth at a small eddy of the river, where a putrid body lay floating directly under his nose.

"The banks of the Hoogly, for five or six miles below Calcutta, are distinguished by the name of the Garden Reach, a name derived, probably, from the Botanic Garden which occupies a great part of that space along the right bank, while the left is adorned with a succession of elegant villas. In sailing up to Calcutta, after passing the Dock-yard, we first come to Fort-William, situated on the left bank of the river. Built on a low alluvial plain, the external appearance of this fortress presents nothing grand or imposing; but on entering within its gates, every one must be struck with the extent, regularity, and beauty of its works. Towards the river, the outworks approach within a hundred yards of the water. The ditch is very broad, and one half of it is regularly filled by the tide. The scarp is double, with an intermediate berme of twenty-five feet, strengthened by an impenetrable hedge of *Trophis aspera.* The lower scarp is on a level with the plain; the upper elevated so as to command the glacis. Platforms in brick-work are laid all around the ramparts for 32-pounder guns, on which, including the outworks, a train of 400 pieces of cannon may be mounted. With a view to preserve the beauty of the works, the ramparts are not cut for embrasures, nor are the guns mounted. In this climate, artillery, and more especially gun-carriages, exposed to the weather, become speedily unserviceable. Even the ramparts themselves would soon yield under the combined influence of the sun and rain. Add to this, that the command of labour in Calcutta is so great, that, in case of sudden alarm, the whole works will be completed for service in the course of a few hours.

"Fort-William contains an extensive armoury, a cannon foundery, a bazar or market-place, and excellent barracks for 2000 infantry. So far as concerns the Europæan garrison, the duty of the Fort is abundantly easy. The main guard consists of a captain, two subalterns, and sixty privates, who have no other duty to perform but to lounge about the guard-house for twenty-four hours, and pay the customary honours to such general officers as pass near their post in the morning and evening. From seven o'clock in the morning, till five in the afternoon, they pay no compliments, but strip off their uniform, and lie down on couches under the verandah of the guard-house. A guard of a subaltern and thirty privates mounts over the Vizier Ali, confined in one of the magazines, which has been converted for his sake into a state prison, and where this unlucky chieftain has been incarcerated for the last fifteen years.

"The defence of the gates and works of the Fort is entrusted to the Seapoys, or native troops, a battalion of whom is constantly on duty here, and relieved monthly from the native cantonment at Barrackpore. These Seapoys are most admirable sentinels. The punctuality with which they execute the orders given to them, admits of no relaxation. There is a strict prohibition against the introduction of wine or spirits into the Fort for the use of the troops; and the schemes by which the Europæan soldiers endeavour to evade it are sometimes uncommonly ingenious; but they hardly ever escape the vigilance of the Seapoys; and the number of the punishments for this offence is as creditable to the one as it is disgraceful to the other. Every delinquency of this nature is tried by a garrison court-martial, composed of the officers of the main guard, with two subalterns from the garrison; and the usual award is twenty or thirty days' solitary confinement on bread and water. The system of corporal punishment is fast dying away throughout the army in India. There was but one instance of it during our stay in Fort-William, and that was in the case of a native artilleryman, who was convicted of desertion, and after receiving his punishment, instantly dismissed the service. If corporal punishment were always, as in this instance, followed by dismissal, it might still have its use in the army, as applicable to cases of inveterate delinquency, but, as it has hitherto been administered, no man possessed of the ordinary feelings of humanity will regret that it is falling into disuse.

" At the time we arrived in Bengal, the annual inundation of the Ganges was at its highest point, and the waters just beginning to abate. The weather was extremely sultry, and seldom refreshed by a breeze. Showers of rain, accompanied with lightning, fell almost daily. The ordinary range of the thermometer was from 86° to 90° in the shade, and it rarely sunk more than two or three degrees during the night.

" The soldiers began very soon to suffer from the diseases of the climate. Bilious fevers, and affections of the liver, degenerating into obstinate dysenteries, carried numbers of them to their graves. These distempers, virulent under the most favourable circumstances, were aggravated in a tenfold degree by that intemperance in the use of spirituous liquors, which forms the deepest stain on the character of a British soldier. The ration of provisions allowed to the soldier by the India Company is extremely liberal; but the practice of issuing out spirits, as part of it, is attended with the most ruinous consequences, and causes, I am well convinced, the loss of one-half of the Europæan soldiers that perish in India.

" The recruits sent out to the King's regiments are mostly young lads, who are slightly, if at all, tainted with the vice of drinking. By a general, but most pernicious regulation, these youths are daily plied, during the voyage, with an allowance of half a pint of ardent spirits, which the greater number of them reject at first with loathing. But the force of example, and the ridicule of their more debauched associates, soon conquer their scruples, and they learn in due time to swallow their dram without reluctance. Thus, by the time they arrive in India, they are pretty well prepared for the unlimited use of that poison, which its extreme cheapness in this country enables them to indulge in; and, speedily degenerating into confirmed drunkards, are either prematurely cut off, or become an useless burden on the service.

" It has been remarked that, notwithstanding the daily issue of spirits to troops on board ship, they are less sickly during the longest voyage than they ever are in quarters. The reason is obvious. In the former case, they are restricted to a moderate allowance, regularly distributed; and were it possible to limit the consumption to the same quantity in quarters, no mischief would accrue from indulging the soldier to that extent; but as matters stand, it is notorious that the gratuitous dram acts merely as a stimulus, provoking an irresistible thirst that is not to be quenched on this side of brutal intoxication.

" A great number of Palankeens attend constantly at the Fort, where they wait, like so many hackney-coaches, for employment, at the rate of a rupee (half a crown) a day. Each palankeen is borne by four bearers, and is usually attended by a fifth, who carries a large umbrella to shade the sunny side of the vehicle. A person may either sit in it or stretch himself at full length, and is carried along in the easiest manner imaginable, at the rate of four or five miles an hour. Officers, on their arrival from a cold climate, are apt to disdain this mode of conveyance as bordering too near on effeminacy. But whatever may be thought of it in the country, the palankeen is indispensable in Calcutta, where the crowds of foot passengers, hackeries, and beasts of burden, raise such volumes of dust, and obstruct the way in such a manner, that the streets are rendered in a great measure impassable. The heat is, moreover, so intense, and the air so close and sultry, that a person languishes directly under a profuse perspiration, that renders his clothes as wet as if he had plunged over head and ears in the Hoogly.

" The theory of the subdivision of labour may not, perhaps, be quite familiar to the hirelings of Bengal; but I will venture to say, that no class of people have reduced it more systematically to practice. The instant you arrive at Calcutta, you are surrounded by a set of men called Sircars, who show you a profusion of certificates testifying to their honesty, diligence, and so forth. They are a sort of small brokers, who seek to be employed in providing you with clothing, furniture, every thing, in short, that a stranger requires, and knows not where to look for. Among other necessaries, they will provide you with servants, for whose honesty they promise to be responsible; and such as arrive here without friends to receive them, must have recourse to this mode of equipment, though it frequently exposes them to the grossest impositions.

"To consider the number of these fellows that contrive to insinuate themselves into your service, would be laughable, if it were not such a grievous burden on your finances. They pretend to justify it on the score of their religion. It is against one man's caste to clean your shoes, against another's to brush your coat; the barber who shaves your chin would lose his caste were he to touch the basin in which you wash; and the man who makes your bed confines his services to that office. When I arrived in Fort-William, my Sircar furnished me with three servants, and I thought him abundantly liberal, but when I came to settle accounts at the end of the month, I found my domestic establishment was swelled to no less than nine. Every one of the principals had his deputy, and of the deputies several had their assistants.

"It is hardly possible to guard against the roguery of such a crowd of idle people, constantly on the alert to take advantage of your carelessness or inexperience: every stray article is sure to disappear; no matter how small its value, they can turn it to account. But the most serious danger is, that your Sircar, or the servant who has charge of your keys and your purse, should prove dishonest. To a man whose daily expenditure is less than a penny, a few hundred rupees would be a fortune for life. Such a temptation, therefore, is hardly to be resisted, where the means of escape are so easy; and should he yield to it, and run away, it is ten to one that the Sircar who recommended him will abscond also, and leave you without the smallest chance of recovering your property.

"The city of Calcutta stands to the north of Fort-William, leaving a clear esplanade of about a thousand yards. Whatever may have been the case with the territorial possessions, the improvement of the capital, under the Company's government, has been rapid beyond example. Within the memory of thousands, still alive, Calcutta was a miserable rush-built Indian village, without commerce or police. At this day it embraces a population of half a million; its harbour, comprehending the whole course of the river downward, displays the flags of all the nations in the universe; and its native merchants, secure in the fruition of their riches, are seen driving along its streets and environs, in London-built carriages, drawn by Arabian horses.

"The English part of the city, called Chouringee, is built in a style of superior elegance. The precautions adopted to obviate the effects of a burning climate have been such as to give scope for the display of a great deal of taste in ornamental building. The houses are surrounded with verandahs supported by columns of all the ancient orders, and perhaps a few more. The windows are numerous, to admit a free circulation of air, and the excess of light is softened by green Venetian blinds. During the prevalence of the hot winds the doors and windows are shaded with mats, made of the roots of the *Kuskus* (*Andropogon muricatus*), which being kept constantly wetted, communicate a refreshing coolness and balmy odour to the air in passing through them. To aid this refrigerating process, the apartments are usually furnished with Punkahs, a gigantic sort of fan, consisting of a frame of wood in the form of a parallelogram, covered with calico, and extending nearly the whole length of the room. This machine is suspended from the ceiling, and kept in constant motion over the heads of the company by an attendant, who pulls a cord attached to its lower edge.

"Calcutta is surrounded by extensive tracts of wooded and marshy ground, which, in the hot season, send forth such swarms of winged insects, that the inhabitants suffer the torments of a plague of Egypt. In the day-time they hardly show themselves, but no sooner are the apartments lighted for the evening, than they pour in in myriads from all quarters, and flying directly towards the light, speedily extinguish it under piles of the dying and the dead. Such as escape with the loss of their wings, drop down, and crawl on the table, or into the dishes and wine-glasses, leaving it at the option of the party concerned either to swallow them or to fish them out. To guard against this source of annoyance, the candles are usually covered with glass shades, but thus prevented from destroying themselves, these little tormentors fly about the room at random, and you have to guard your mouth, eyes, and bosom, from their intrusion. Their variety is infinite, but the most offensive of the whole is a small green *Cimex*, which attaches itself more particularly to your clothes, diffusing all round the genuine odour of the bug. The only one which forbears to annoy you at this period is the *Moskito*, but it is only to attack you at leisure after you have retired to bed.

"The Botanic Garden is situated on the right bank of the Hoogly, some miles below Calcutta, and occupies an area of five miles in circuit. It was originally established about 30 years ago, and by the unremitted attention of Dr. Roxburgh, who superintended it till within these few years, its catalogue of plants amounts already to four thousand. After his return to Europe it was for some time neglected, but is now placed under the charge of another experienced botanist (Dr. Wallich), whose zeal for the science promises to rival that of his predecessor. The assemblage of plants from the eastern boundary of Bengal, Silhet, the Garrow and Nepaul Mountains, is peculiarly interesting. The Cape plants do not thrive here, nor is it surprising, as no soils can be more opposite in their qualities than the rich alluvial loam of Bengal and the hard gravelly clay of Southern Africa.

"The garden is peculiarly rich in *Palms*, the constant intercourse between Bengal and the Indian Archipelago having been the means of introducing a great variety of this elegant family of plants. Among others, a fine grove of a rare species, the *Sagus Rumphii*, presses itself on the attention. It has been supposed by many persons that the first idea of the Gothic column and arch was suggested by the stem and fronds of the *Palm.* If any thing could confirm in that opinion such as entertain it, it would be the appearance of this grove, than which nothing can approach nearer to the finest specimens of that style of architecture. The trees are arranged in regular avenues, crossing each other at right angles, and the height of the stems is so equal, and the arching of the fronds so true, that I could hardly persuade myself that such perfect symmetry could be attained without the assistance of art. The foliage is so thick overhead, that not a ray of light can penetrate from above, and so completely is vegetation destroyed in the shade, that while walking through it, I fancied myself treading the cold paved floor of a Gothic cathedral.

" I also observed in the Garden some fine specimens of the *Palmyra* or *Toddy Palm* (*Borassus flabelliformis*), called in India ' *Taul* or *Tala.*' The *Palmyra* and the *Cocoa* (*Cocos nucifera*) are extensively cultivated throughout Bengal, and both of them are remarkable for the variety of useful purposes to which they are subservient. From both of them is extracted the liquor called *Toddy*, which is procured by cutting off the flower-stalk, and attaching to the stump of it a bottle, a joint of bamboo, or a calabash, to receive the sap that flows copiously from the wound. This sap tastes exactly like the milk of the cocoa-nut, and possesses an aperient virtue which recommends it to the generality of Europæan settlers, but it must be used very soon after it has been collected, otherwise it begins to ferment, and acquires an intoxicating quality. This fermented liquor, subjected to distillation, yields an ardent spirit of the most pernicious kind, known by the name of pariah arrack. The annual produce of one of these trees is valued at eight or ten rupees. The crust of the *Palmyra* stem is extremely hard, and split into five or six divisions is used in constructing huts and bungaloes. The leaves resemble those of the *Latania*, and are used as hand-punkahs or fans; for which purpose the loose extremities are pared off to a certain form, and the border secured by a net-work of wire. These fans are usually painted of a variety of gaudy colours.

Separated longitudinally, according to the natural division of the leaf, the segments of it are used by the natives to write on in lieu of paper. They trace the characters with an iron stile, by a series of punctures through the cuticle of the leaf, and render the writing legible by smearing it over with a composition of lamp-black and cocoa-nut oil.

"There is a singular bird, of the Heron tribe, that frequents the environs of Calcutta during the rainy season, the *Ardea dubia*, I believe, of Linnæus. It stands five feet high. Its bill is eighteen inches long, triangular, tapering to a point, and roughened by the exfoliation of its substance; the eyes small, and of a pale blue colour. Its head and neck are covered with a few straggling black hairs instead of feathers. Its breast, belly, interscapulary region, greater wing-covers, and tertiary quill feathers, are ash-coloured; and its wings, back, and tail, dark blue. Its legs are white, and peculiarly long and slender. But what distinguishes it from all other birds, is a cylindrical membraneous pouch that depends from the base of the neck, while the upper part of it appears like a large puckered wen between the shoulders. It has the power of inflating or contracting this bag at pleasure. In the former state it measures eighteen inches in length, and about four inches in diameter. For what use this grotesque appendage serves the bird I never could learn. It is generally believed to be the crop, in which the bones, that constitute a great proportion of its food, are macerated. This opinion, however, I cannot assent to, for though I watched many hundreds of them in the act of swallowing large bones, I never could trace the progress of one to the pouch.

"These birds, which are known by the nickname of *Adjutants*, from the peculiar solemnity, perhaps, of their strut, resort in myriads to Fort-William, where the large consumption of beef and mutton yields them a copious supply of their favourite food. Every day at one o'clock, they regularly take their stand in front of the barracks, and furnish a fund of amusement to the soldiers by their scrambling and quarrelling for the fragments that are tossed among them. The larger beef-bones occasion them some trouble in arranging their parallelism with the bill, but I never saw an instance of any being rejected on account of its size.

"The voracity of the *Adjutant* encourages soldiers to play off their wit at times in rather a cruel manner. An instance of this kind occurred lately, when a mutton-bone, charged with gunpowder and a lighted fusee, was tossed among a flock of them, and the unlucky individual, to whose lot it fell, instantly blown to pieces. The perpetrator of this inhuman prank was tried by a court-martial, and deservedly flogged.

"These birds inherit a great share of the dulness and apparent stupidity of their tribe. In the day-time, they stand for hours motionless in the squares of the Fort, some on one leg, some on both, and by way of varying their posture, occasionally squat upon their hams, or lie fairly down on their belly. At night, they perch upon the battlements of the Fort, or among the topmost branches of *Uvaria longifolia*, that shade its squares, where they roost, insensible to the intrusion of a whole legion of *Flying Foxes* (*Vespertilio Vampyrus*), that resort every evening to these trees to feed upon their fruit.

"The annual festival in honour of the Hindoo divinity Doorga Pooja, was celebrated in Calcutta on the 9th, 10th, and 11th October. During that period the whole city was in an uproar, and exhibited a spectacle resembling what we read of Venice at the time of the Carnival: religious processions during the day, and at night the houses of the principal inhabitants illuminated, and thrown open for the reception of all well-dressed people. These houses are built in the form of a hollow square, and on occasion of the festival the central court is covered over with an awning, and the ground with a carpet. Three sides of it are occupied with seats for the company; on the side fronting the entrance is an elevated recess wherein the image of the godess, in a recumbent attitude, is exposed to view, carved in wood, and gorgeous with finery. This recess is hallowed ground, which all may gaze on, but none are permitted to enter. In the cèntre of the area stand two or three Natches, or dancing girls, clothed in flowing robes of silk bedaubed with tinsel, who sing and dance in honour of the divinity, accompanied by as many performers on a musical instrument resembling a guitar. In this music there is little that is interesting to an Europæan, in the singing less, and in the dancing nothing at all. These women, with their dark complexion, dishevelled locks, and distorted attitudes, appear like so many witches in masquerade.

" Europæans are admitted to the Natches, as these fêtes are termed, without scruple; but officers in uniform are received with peculiar distinction, a visit from them being looked upon as a great favour. As soon as they enter, the master of ceremonies ushers them forward to the post of honour, next to Doorga, and after they have sate down sprinkles them over with âta of roses.

" These festivals are the drain by which the revenue of the opulent Hindoos returns into the general circulation. The household expenditure of these people is extremely moderate, but a single festival will cost from 20,000 rupees to ten times as much, in alms to the poor, donations to the priests, and decorations to a wooden image, which is, after a few days' parade, tossed unceremoniously into the river. A man may be very religious, and expend profusely from motives of conscience; vanity, or the spirit of emulation, may urge another to equal extravagance. But taking mankind in the gross, it may safely be assumed that there are few, who, after exerting all their faculties in the accumulation of money, will not feel some reluctance in dissipating it with so little enjoyment, and I question whether this is not the part of their religious duties which the Hindoos perform with the least alacrity, and one, the frequent recurrence of which, would go farthest to shake the principles of their faith. If the Europæans could, by the force of example, lead the wealthy Hindoos to enlarge the scale of their personal expenditure, it would tend to give them a disrelish for the unmeaning festivals of Doorga Pooja, and pave the way in all probability for a more œconomical creed.

" This is a change, however, not likely to be brought about in a hurry. The prominent talent of the British does not appear to be that of conciliation. We have had large establishments in India for upwards of a century, and our influence extends now over the whole of this immense region; yet that influence, all powerful as it is in political and commercial affairs, has not had the slightest effect in approximating the natives to us in a social point of view. The manners, the dress, and the domestic œconomy, of those even who are in the habit of daily and hourly intercourse with us, are the same as they were the first day we set foot in India. [illegible]

" Religion has lent her aid to strengthen and perpetuate the difference which originally existed between the manners of the Hindoos and those of their conquerors. With the former, religion is omnipotent, it prescribes their food, their dress, their trade, and every action of their life. With the latter, its mandates too often go for nothing, or, if they produce any effect, it is by their tacit influence on the moral conduct. The Hindoo bears a superstitious veneration for every thing possessed of life: the Briton venerates nothing, but sacrifices all, without distinction, to his appetite or his amusement. The former worships 333 millions of gods, male or female, some with two arms, some with two hundred; the latter, so far as can be gathered from his actions, worships neither god nor goddess. So little influence, unhappily, indeed, does religion appear to possess over our conduct, that the more intelligent Hindoos regard us as a nation of enlightened Atheists, and would look upon conformity to our faith as tantamount to the abjuration of all religion.

" The military force of the Presidency of Bengal consists of two regiments of light dragoons and six of infantry, King's troops: one regiment of Company's Europæan artillery, eight regiments of native cavalry, and thirty of native infantry, each of two battalions of 1000 rank and file. With such a force judiciously managed, the Governor-General had good reason to look for a speedy and successful issue to the war in Nepaul. His anticipations were, however, disappointed, and the determined resistance and repulse sustained at the opening of the campaign, made a deep impression on his Lordship's mind. In the first alarm he sent off for reinforcements far and near, to Java, Ceylon, Mauritius, and the Cape. The successive arrival in the Hoogly of troops from all these stations, was the first and only intimation the Council had of their having been called for, and as the panic was by this time considerably abated, our reception was not quite so cordial as we expected. It was shortly after decided that the greater part of the auxiliaries should be sent back to their respective stations.

“ On the 19th of November we were ordered on board a flotilla of small sloops which were to convey us to our transports anchored off Saugur; and I embarked in the head-quarter ship, the Lucy and Maria. Saugur is the most westerly of a vast series of islands which, under the general name of Sunderbunds, form the base of the gigantic Delta. These islands are covered, for the most part, with impenetrable forests, intermingled with *Jungle Grass* (*Saccharum spontaneum*), that grows to the height of 12 or 15 feet, and affords a secure retreat to the wild hogs, deer, and royal tigers, the joint possessors of this pestilential territory. The latter are so numerous and so bold, that it is dangerous to cast anchor near the islands, or to navigate the creeks that separate them. It was no more than a week since two natives were carried off from boats approaching too near the shore, one of whom was the postman from Saugur to Calcutta.

“ We sailed from Saugur the 24th November, with a fine breeze, that soon wafted us beyond the dangers of the Sand Heads. We had every reason to be satisfied with the ship and the accommodations provided for us on this voyage. In all contracts for the conveyance of troops, the Indian government stipulates with the master of the ship for messing the officers. For this purpose the usual allowance is six rupees per day for each officer, four of which are charged to the Honourable Company, and two to the individual. The Lucy and Maria, I may observe, is the same ship, then called the Trowbridge, in which I went from the Cape to Mauritius. She is a stout, teak-built vessel, registered at 775 tons, but, so wide is the difference between the registered and the real tonnage of some vessels, that Captain Barclay assured me, his cargo, the last voyage he made to England, weighed upwards of 1300 tons. It is only mixed ladings, however, that can be stowed to this amount; a certain proportion of heavy goods, such as saltpetre, rice, or sugar, paying a freight of about £15, with light goods, such as cotton, &c. at 50 cubic feet the ton, and yielding a freight of £18. He made the last voyage, from Calcutta to the Thames and back again, in 12 months. Her freight for the voyage was £20,000, and all expenses of repair, wages, &c. came to about half that sum. The original cost of building her was £40,000, and the materials are of so superior a quality, that she will wear well to the age of fifty years. All her cables and standing rigging are made of *Coire* (the fibres of the cocoa-nut). Ropes fabricated from this material, with certain preparations, are reckoned much superior to those made of hemp. The strands are dipped in a composition of tar and fish-oil, and deprived of all the superfluous stuff by means of a machine before they are twisted together. This preparation renders them indestructible either by fresh or salt water. *Coire* cables are so buoyant as to float in water, which saves them from wearing against the bottom in foul ground.

" Our voyage was pleasant, but unreasonably tedious, owing to baffling winds and long protracted calms. Our chief amusement on the passage was the usual one of catching sharks and bonitos. We killed a great number of the former, and among the rest, a blue shark (*Squalus glaucus*) 10 feet long, with a couple of sucking fishes sticking to its side. On opening its stomach we found nothing in it but two or three small fishes of the genus *Tetrodon*, and a tin porringer half full of burgou, that had dropped overboard in the morning. The shark is usually surrounded by a group of *Pilot-fishes*, which play about it in the same manner as a flock of small birds are sometimes seen playing round an owl. The attachment that prompts animals of such opposite natures to associate with each other is generally believed to be reciprocal. It appears to me, however, to be exclusively confined to one of the parties, the *Pilot-fish*, and to be neither more nor less than a parasitical attachment, founded on the frequent opportunities it enjoys of picking up the small scraps scattered about by its ravenous associate in the act of devouring its prey.

" The *Sucking-fishes* (*Echeneis Remora*) are not so constant in their attendance on the shark as the pilot-fish, but when they do accompany it, I have no doubt they are urged by the same selfish motive. When fatigued with its own exertions, the *Remora* fixes itself on the shark, and is carried along without any further effort than that of sticking fast. The instrument of adhesion is a flat process covering the crown of the head, and surrounded with a fleshy border. It consists of seventeen transverse bony plates, overlapping each other, and divided by a longitudinal septum. When this instrument is to be put to use, the *Remora* applies the crown of its head to the skin of the shark, then raises the bony plates on their edge, like the plates of a Venetian blind, while the fleshy border adhering firmly prevents any communication from without, and thus a vacuum is formed which it requires a strong force to overcome. The outer edge of the plates is rough like a file, to prevent their sliding along the object against which they are applied. The ordinary colour of the *Remora* is purple, but it possesses the faculty of changing it suddenly from that to milk-white. This I had an opportunity of repeatedly observing in the two individuals we caught, which I kept alive for a whole day in a bucket of water.

" In the organization of this singular little fish, we have to admire the wisdom of nature in the adaptation of means to ends. Why the *Remora* should be furnished with the means of transporting itself by foreign assistance, is a question which no one, so far as I know, has attempted to solve. But having been so furnished, we can easily perceive that the instrument has been placed on the only part of its whole body where it could perform its functions with effect. The *Cyclopteri* are provided with an apparatus intended for a similar purpose. In them it is situated on the breast, but as they adhere to fixed bodies, it might be placed on the head, belly, or side, and still serve the end in view. In the *Remora*, on the contrary, designed to adhere only to moving bodies, and to be carried along by them, the crown of the head is the only part where the sucker could be placed so as to be used with safety to the animal. If it were placed on the chin, it would impede the action of the gills, and on any central part, such as the breast, belly, or side, the fish could not preserve its parallelism with the moving body without greater exertion and fatigue than the use of the instrument could save, and if it once yielded to the force of the water, the anterior part of the body would bend back, and the spine perhaps would be broken before it could disengage itself."

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In 1817, one of those circumstances which enable the enterprising officer to distinguish himself, even in times of peace, furnished Captain Carmichael with an opportunity of extending his scientific knowledge. The British Government having deemed it expedient to take possession of Tristan da Cunha, motives of curiosity led the subject of our memoir to apply for permission to accompany this expedition, which embarked in November, 1816. The detachment consisted of about 50 men, with a captain, 2 subalterns, and a medical officer. Captain Carmichael has detailed the result of his observations on the natural history and productions of that remote and little known island, in a paper, published in the Linnæan Transactions, which procured him considerable attention, being the first distinct account that had been given of the spot in question. His name was accordingly associated with Tristan da Cunha, and he has frequently told me, that his astonishment was not small, when on revisiting Britain, he found himself enrolled among the Fellows of the Linnæan Society, and styled "of Tristan da Cunha."

As Captain Carmichael's account of Tristan da Cunha is published in a work necessarily of very limited circulation, and as this memoir of his life would be imperfect without some notice of it, some extracts from it shall now follow.

" We sailed from Table Bay on the 2d November, 1816; a liberal supply of agricultural instruments, with a team of labouring oxen, and some cattle for breeding, having been sent on board at the same time. Two days after, we encountered a heavy gale, during which, the animals, standing unsheltered on the deck, were so much injured by the rolling of the ship and by the sea washing over them, that they all died before we arrived at our destination. The westerly winds, which usually prevail in the high southern latitudes, protracted our voyage to the 28th November, but we had the good fortune to come to anchor in fine weather, and landed all the stores without loss or damage.

" Tristan da Cunha is situated in 37° 6′ S. lat., and in 11° 44′ W. long. The whole island is apparently a solid mass of rock in the form of a truncated cone, rising abruptly from the sea, and ascending at an angle of 45 degrees to the height of 3,000 feet. This mass is surmounted by a dome 5,000 feet high, on the summit of which is the crater of an old extinguished volcano.

" The island is of a circular form, and about nine leagues in circumference. In various places the sea beats home against the salient angles of the mountain, rendering it impossible to walk round the island. Between those points a narrow beach has been formed, by the gradual accumulation of the fragments of rock daily precipitated from above, and is covered in some few places with a layer of fine black sand resembling gunpowder, which is, however, kept in constant motion, being washed away by one gale, and cast up by the next.

" The face of the mountain, as far as the base of the dome, is mostly covered with brushwood, intermixed with fern and long grass, which veil its native ruggedness. In many parts, however, it is completely bare, and presents to view the edges of a vast number of strata, arranged horizontally, or at slight degrees of elevation. These strata are generally 5–10 feet thick, and vary essentially in their internal structure. The greater number are of solid rock, of a bluish-gray colour and extreme hardness, in some instances homogeneous, in others exhibiting crystals of hornblende, felspar, and olivine, sparingly scattered, or forming more than a moiety of the compound mass. Between these, are frequently interposed beds of scoria, cohering from the effect of partial fusion; of tufa, studded with crystals of augite; or of ashes, condensed by the pressure of the superincumbent mass. The latter, still retaining in a great measure their friable nature, moulder gradually away, and leave the more compact strata in projecting shelves.

"The mountain appears to have been rent asunder by some violent convulsion, and the fissures filled up by a hard stony mass, of a bluish or reddish colour, and of the nature of trap, forming regular veins, the ramifications of which can be traced by the eye to a great height in the face of the rock. The sides of these veins, where they come in contact with the rock, are invariably in a semi-vitrified state, and exhibit obscure marks of crystallization. Along the north-west side of the island there runs a belt of low land, about six miles long, varying from a quarter of a mile to a mile in breadth, and presenting to the sea a perpendicular front, from 50 to 300 feet high. The whole of this plain is a confused assemblage of stony fragments, scoria, and other volcanic products, resting on a bed of lava. All these matters are in a progressive state of disintegration, and the greater part of them reduced to mere nuclei imbedded in their constituent elements in the state of a black indurated earth.

"The northern extremity of the plain is, in a great measure, cleared of its wood. By setting fire to the grass, the trees have been so far scorched as to destroy their vegetation, but they still lie strewed along the ground, and it will cost some labour to remove them. The rest is yet in a state of nature, covered with an impenetrable copse.

"The surface of the plain, though apparently smooth and even, while clothed with its native herbage, is in fact extremely irregular, being everywhere broken by small ridges of loose stones, concealed under a mere scurf of soil.

Between those ridges, however, the soil is pretty deep, and consists for the most part of the remains of decayed vegetables, with here and there a substratum of alluvial earth, approaching to the nature of clay. It is soft, spongy, and retentive of moisture, and possesses most of the characters of peat. This soil has been found admirably adapted for the production of culinary vegetables, but is far too light to support the weight of trees or large shrubs.

" This plain is the only part of the island that is the least susceptible of cultivation, and serious obstacles oppose the conversion even of this to the purposes of agriculture. With the exception of the few spots already mentioned, where the earth washed down by the rain has accumulated, the whole of the ground, before it will be fit to receive the plough, must undergo a regular trenching in order to remove the scattered stones, and to loosen the hard earth, which lies immediately underneath the surface, and incorporate it with the vegetable mould. After this preliminary operation, there can be no doubt that the soil will yield a fair return in all sorts of Europæan grain.

" The ascent to the peak is practicable in sundry places, but the undertaking is attended with serious difficulties and not free from danger. I went up on the 4th of January, accompanied by Dr. Evans, a couple of servants, and a guide, who had been there some days before. We experienced some obstruction at the outset, in making our way through the long grass (*Spartina arundinacea*) which grows along the lower part of the mountain in close entangled tufts. As we advanced, our progress was retarded by the extreme steepness of the ascent, and the loose incohesive nature of the rocks, which we could hardly venture to touch, lest their fragments should fall upon our heads, nor did we run less risk in availing ourselves of the branches of the arborescent *Phylica* to support our weight, for the greater proportion of these being rotten, we were obliged to choose with caution, as a mistake might prove fatal. After a laborious effort of three hours, however, we gained the table land, and there discovered, to our mortification, that the upper region of the mountain was completely obscured. Urged by a strong west wind, the cloud broke from time to time against the sides of the dome, and gave us a transient view of the peak at a height and distance that were by no means encouraging. After resting, however, for a few minutes, we proceeded across the base of the dome, trusting that the cloud would be dissipated by the meridian sun; nor were we in this respect altogether disappointed. In the meantime, we found the ground, as we advanced, a perfect swamp, studded with tufts of small rushy plants, that gave way under the slightest pressure. Here also we had to pass through extensive patches of fern (*Lomaria robusta*), the stems of which, like junks of old cable, trail along the ground, and cross and recross one another in such an intricate manner, that it required all our circumspection to avoid stumbling over them. Further on, the ground becomes more firm, but is perforated in all directions by the various species of *Petrel*, which resort in myriads to the island during the season of incubation and burrow in the earth. The weaker tribes of these birds are devoured in vast numbers by the *Skua Gulls*, which pounce upon them as they come out of their holes in the evening, and leave nothing but the bones and feathers to attest the havoc made amongst them. The surface of the dome is furrowed on every side with ravines, which take their rise among the scoria of the peak, deepen as they descend, and open in tremendous chasms on the edge of the precipice. The various portions of the surface thus cut off in a great measure from all mutual communication, grow narrower and narrower as you approach the base of the peak, and dwindle at last into bare ridges of scoria, so sharp and so steep, that the wild goats of the mountain dare hardly venture to tread them. That ridge, in particular, over which we must either have passed, or returned without accomplishing our object, is, for at least 50 yards, not more than 12 inches in diameter. The wind blowing in violent gusts at the time rendered it the more difficult to maintain that strict equilibrium of body, the slightest bias from which, either to one side or the other, would precipitate any of us in an instant to the depth of several hundred feet. We got safely over it, however, though with some trepidation, and in a manner as various, I believe, as the number of our party would admit of.

" A short way beyond this ridge, vegetation ceases; not so much, however, owing to the elevation of the ground, as from the total want of any kind of soil wherein plants may fix their roots. From this point to the summit, a distance of about a mile and a half, the whole is a mass of scoria, fragments of cellular lava, and all sorts of volcanic refuse, constantly slipping under your feet, and rendering the toil of ascending excessive. For nearly a mile, we walked along a ridge of blue lava, which seems to have been at one time covered over, but afterwards left exposed by the recession of the loose matters which covered it. In grain and colour it resembles the veins which intersect the island mass; but is disposed on the slightest stroke to break into small amorphous fragments.

" The crater is nearly a mile in circumference, its border is irregular, the south side being 200 or 300 feet higher than the north, by which we ascended. At the bottom of it there is a pool of water about 150 yards in diameter, to which the descent by the north side is gradual and easy. Its depth appears to be inconsiderable, as we could discover the bottom more than half-way across, and its border is covered with rounded fragments of cellular lava, which float about at the humour of the breeze. The water is pure, and untainted with any mineral solution. From the peak we could discern the distant ocean on all sides, over the cloud which still shrouded the lower part of the dome, but no part of the low land can be seen at any time, being covered by the projection of the table land. I found several mosses on the summit of the peak, and some lichens, among others the *L. paschalis.* There was also a large patch of snow a considerable way down its side, and another within the crater.

" Besides the principal crater, which terminates the peak, there are several others scattered over the declivity of the dome, which must have rested for ages quiescent, as they are now covered with verdure. Two of these are situated near the edge of the table land, looking down on the landing place.

"As we walked down the mountain on our return, we passed among flocks of albatrosses, engaged in the process of incubation, or tending their young. There are four species of them that breed on the island, none of which hatches more than one egg at a time, the *Diomedea spadicea, exulans, chlororhynchos,* and *fuliginosa;* the two former are at no trouble in constructing their nest, merely choosing a dry spot of ground and giving it a slight concavity to prevent the egg from rolling out of its place. The egg is white, very large, and of a peculiar shape, being uncommonly long in proportion to its diameter, and equally thick, or nearly so, at both ends.

"The *Black Albatrosses* (*D. fuliginosa*) are at this season gregarious, building their nests close to each other. In the area of half an acre, I reckoned upwards of an hundred. They are constructed of mud, raised five or six inches, and slightly depressed at the top. At the time we passed, the young birds were not more than half grown, and covered with a whitish down. There was something exceedingly grotesque in the appearance of these birds, standing on their respective hillocks, motionless as so many statues, until we approached close to them, when they set up the strangest clattering with their beaks, and if we touched them, squirted on us a deluge of fetid oily fluid from the stomach.

"The *D. chlororhynchos* builds its solitary nest in some sheltered corner, selecting, in particular, the small drains that draw the water off the land into the ravines. There it runs up its nest to the height of 10 or 12 inches, of a cylindrical form, with a small ditch round the base. A curious circumstance with regard to this bird, is, that when irritated the feathers of its cheeks are separated, so as to display a beautiful stripe of naked orange skin, running from the corners of the mouth towards the back of the head.

"All of these birds nourish their young by disgorging the contents of their stomach. They are never observed to carry any article of food in their bill; those substances, indeed, from which they derive the chief part of their sustenance, the blubber of dead whales, seals, and sea-lions, would melt away if caried in the bill to any distance. We could not help admiring the utter unconsciousness of danger displayed by them at our approach; they never showed the least disposition to move out of our way; even when kicked or pulled off their nests they made not the smallest show of resistance, but quietly returned to their post, or stood still until we passed on. Their plumage is in the finest order, copious, and without the least stain. They find great difficulty in getting on wing, and must run 20 or 30 yards along the ground with expanded wings before they can get fairly under weigh. We had the curiosity to take one of them by the point of its wings and fling it over the rock, yet though it had several hundred feet of clear fall it never recovered itself, but dropped down like a stone. On this account, when not engaged with their young, they usually rest upon the edge of the precipice, from which they can launch at once into the air: and on entering again upon that difficult part of our route, we had to kick upwards of a dozen of them to the right and left of us before we could get on. We arrived at the cantonment about sunset, after a most fatiguing journey of 14 hours.

" In viewing the general structure of the island, and comparing its diminutive size with the great number of spiracles crowning its summit, and which must all have been at one time or another in a state of activity, there can remain little doubt that the whole of it is of igneous origin. The solid foundation on which it stands is undoubtedly lava. The platform which forms the plain is also a sheet of lava, and though the face of it at one part breaks into prismatic columns, after the manner of basalt, yet the bed of semivitrified rock on which it rests seems to leave no room for doubt with regard to its origin. An entire hill, 700 or 800 feet high, near the centre of the plain, is composed of nothing but stratified tufa. The plain is encumbered with large detached masses of porphyritic stone, and with others enclosing crystals of sulphur or of augite, which seem to have been ejected in their present state from the interior of the mountain; and in one instance I met, near the base of the mountain, and under one of its strata, with a specimen of the convoluted lava, so common in the Pays-brûlé of the island of Bourbon.

" The climate of Tristan da Cunha is so mild, that the herbage remains uninjured throughout the year. Snow is never seen on the low land: and the only indication of winter is a transient sprinkling of hoar-frost, too slight to give any serious check to vegetation. The thermometer, during summer, rarely ascends beyond 74° in the shade, and stands at about 110° when exposed to the meridian sun. At night it occasionally falls so low as 48° or 50°.

" If we may give credit to the information of a man of the name of Currie, who has lived on the island for the last six years, its climate may be regarded as one of the most rainy in the world. According to his account, the months of January, February, and March, are the only period throughout the year in which fair weather may be expected with any degree of certainty. During the other nine months, the rain, he told us, is almost perpetual. How far the latter part of his statement may be correct, remains still to be proved; but it was our misfortune to experience the fallacy of the first, for from the 28th November, the day on which the detachment landed, to the 30th March, when I quitted the island, it rained, on an average, every second day.

" This excessive humidity is not, however, entirely chargeable to the latitude in which the island is situated. Of this we had frequent and tantalizing proofs, for at the very time that the rain poured heaviest down, we could plainly distinguish from under the skirts of the cloud which hung over us, the distant horizon illuminated by the rays of the sun.

" The power which high mountains possess of condensing the moisture of the atmosphere, and precipitating it in the form of rain, is nowhere, indeed, more apparent, or more unremittingly exerted than on this island. The upper region of the mountain is usually involved in a thick cloud, which not only obscures the whole island, but extends its shade to some distance over the surrounding ocean. From this cloud the rain descends in heavy and protracted showers, for the most part on the lower grounds only, but occasionally on the summit also. In the latter case, its fall is announced by the sudden appearance of torrents of water, pouring in a hundred channels over the edge of the precipice, dashing down from cliff to cliff, and forming a series of cascades, the most magnificent, perhaps, on the whole face of the globe.

" With such a moist climate, and such frequent rains, it is a circumstance worthy of remark, that the island is but scantily supplied with running water. The only permanent stream of any magnitude in the whole island, is one which gushes out of the base of the mountain, immediately behind the cantonment. Excepting this brook, you meet with nothing from one end of the plain to the other but the dry beds of mountain torrents, impetuous, indeed, while they flow, but ceasing with the shower to which they owe their existence. This singular deficiency of springs may perhaps be attributed to the nature of the rocky mass of which the island is formed. Though regularly stratified, the rock is cracked and split in all directions, and the rain, transmitted through the spongy, absorbent soil, penetrates easily into its fissures, and sinks down at once to the level of the sea, where it may be seen along the shore, gushing out through the sand on the reflux of every tide.

" Notwithstanding the frequency of the rains, the climate appears to be abundantly healthy. Not a symptom of sickness appeared among the soldiers during the four months I remained on the island. . . . . . . . . .

" The spot pitched upon for the cantonment is at the northern extremity of the plain, about half a mile from the landing place, and within range of cannon-shot from the anchorage. It is plentifully supplied with excellent water from the stream already mentioned, which runs close by it, and which even during the hottest days of summer, maintains the low temperature of 50°. This stream, after running its course for about half a mile, precipitates itself in a cascade over the face of the rock into a small sandy cove, where boats can easily put in, to supply shipping with wood and water.

" The prevailing winds off Tristan da Cunha blow from the westward and southward. Strong gales are frequent, but rarely continue above 24 hours. They never blow quite home on the island, but incline upwards at some distance from the shore, and striking against the face of the mountain, are beat back on the low land in furious whirlwinds.

" The sea immediately round the island is fathomable to the distance of a mile and upwards. The bottom is everywhere rocky and covered with a gigantic species of sea-weed (*Fucus pyrifer*), which, after growing from the depth sometimes of 20 fathoms or more, stretches along the surface of the water, and preserves it in some degree smooth and unruffled during even the highest winds.

" This is a circumstance of the more importance, as the coast abounds in a variety of excellent fish, which will prove a valuable source of subsistence should the island come to be permanently inhabited. Among these are several species well known at the Cape of Good Hope. The *Snook* (*Scomber serpens*), the *Horse-mackarel* (*Scomber Trachurus*), the *Roman Fish*, another species of *Scomber*, and the *Jacobeever* (*Scorpæna capensis*). The best fish, however, and fortunately the most abundant, is a *Chætodon*, I should think, but which is figured by Forster as a New Zealand fish, under the name of *Sparus Carponemus*. To the genus *Sparus* it has certainly no affinity, if the form and disposition of the teeth are of any value in forming the character. This fish usually grows to the weight of five or six pounds, and is remarkable for this circumstance, that when pulled up by the hook it discharges from its vent a large quantity of air, that follows it in large bubbles. A large species of *Perca* is sometimes caught in the deep water. Among the rocks are found an undescribed species of *Callionymus*, and a most beautiful *Labrus*. I saw one *Exocœtus exiliens* that dropped on board a ship while at anchor, and which measured 18 inches in length. The only shell-fish I observed were a *Chiton*, a diminutive *Cardium*, a *Patella*, and two *Buccinums*. A large *Crawfish* is found in abundance, and of good quality: the *Sepia octopoda*, and an *Echinus*, with a small land insect, belonging to the old genus *Cancer*. Several species of *Corallina* are common on the rocks.

" Two species of the Seal are the only quadrupeds on the island that can be considered as strictly indigenous, the wild goats and hogs having been introduced since its discovery by the Europæans.

" The *Bottle-nosed Seal*, or *Sea Lion* (*Phoca leonina*). The colour of this animal is bluish-gray along the back, approaching to white on the belly. It sheds its hair once a year, which falls off in large irregular patches, giving the animal at that season a most ragged and uncouth appearance. The full-grown male measures 20–25 feet in length, and yields 70 gallons of oil. The female is considerably smaller; when irritated, it has a curious manner of protruding its snout and inflaming the skin over its nose; but there is nothing like the crest with which the head of the animal is adorned in Shaw's *Zoology*. The whole figure is, in truth, a complete caricature, without the slightest resemblance to the original.

" These animals pass the greater part of their time ashore, never quitting it unless when disturbed, or when, urged by hunger, they repair to the reef to feed on the sea-weed. They may be seen in hundreds lying asleep on the sandy beach, or concealed among the long *Spartina* grass which borders the sea-shore. These huge animals are so little apprehensive of danger, that they must be kicked or pelted with stones before they make any effort to move out of one's way. When roused from their slumber, they raise the forepart of their body, open wide their mouth, and display a formidable set of tusks, but never attempt to bite. Should this, however, fail to intimidate the disturbers, they set themselves at length in motion, and make for the water, but still with such deliberation, that on an expedition which we once made to the opposite side of the island, two of our party were tempted to get astride upon the back of one of them, and rode him fairly into the sea.

" The *Falkland Island Seal* (*Phoca australis*). This species grows to the length of five or six feet. The fur on the back is dark brown, intermixed with long hairs tipped with white. The throat and breast are cream-coloured, the belly rufous. The vibrissæ of the male are white, very long, some of them

12 inches, and hang down over its breast. The fore feet are placed near the centre of the body, which enables it to sit erect, in an attitude much resembling that of a Penguin. Though these animals herd occasionally with the sea lions, they are much more shy in their nature, and speedily forsake those parts of the island where they are liable to intrusion. They bark like a dog, and are of a bold, ferocious disposition.

" The wild hogs secrete themselves in the deepest recesses of the wood, whither it is impossible to pursue them. Their ordinary sustenance is the root of the *Wild Celery* and the *Pelargonium;* but they occasionally prowl along the shore, and feed on the carcasses of seals and sea-lions that fall in their way.

" The wild goats have retreated to the highest ridges of the mountain, where they are equally secure from disturbance. From the very small number, however, that has been seen there, it may be inferred that they have not greatly multiplied.

" The only land birds on the island are a species of *Thrush* (*Turdus Guianensis?*), a *Bunting* (*Emberiza Brasiliensis?*), and the common *Moor-hen* (*Fulica Chloropus*). These birds have spread over the whole island, and are found on the table land as well as on the low ground. The *Fulica* conceals itself in the wood, where it is occasionally run down by the dogs; the others fly about the cantonment, and are so tame as to suffer themselves to be caught with a hand-net. The latter proved extremely destructive to our garden, nipping off the young plants as soon as they appeared above ground, but their ordinary food is the larvæ of certain species of *Phalæna*, and the berries of the *Empetrum* and *Nerteria.*

" Of aquatic birds there is great abundance. I have already mentioned four species of *Diomedea.* There are six species of *Procellaria*, among which are the *P. gigantea*, *cinerea*, and *vittata.* The last, and the other three, which are smaller, are night birds, never appearing on the wing till after sunset. They may be caught in any number by kindling a fire of wood. Attracted by the light, they flutter round it, like moths round a candle, till at length, the greater part, dazzled by the glare, plunge into the flame and perish. The *Larus Cataractes* is the common tyrant of all the smaller birds, and destroys them in multitudes. There are two species of *Sterna*, the *S. stolida*, and one which varies very little from the *S. Hirundo.* The former builds in trees, and lays a solitary egg. I never saw the nest of the latter.

" The *Crested Penguin* (*Aptenodytes Chrysocoma*) conceals itself among the long grass, and in the bottoms of the ravines where they open upon the shore. Here they assemble in countless multitudes, and keep up a moaning noise which can be heard at a great distance; and combined with the roar of the surge, re-echoed from the mountain and the bold inhospitable coast around you, is calculated to excite a train of ideas by no means pleasant. It is owing, perhaps, to the scantiness of its plumage, that the *Penguin* swims heavier than any other bird, no part except the head appearing above water. This gives it undoubtedly a peculiar facility of diving and pursuing its prey under the water; with the same view, perhaps, its eyes appear to be uncommonly sensible to the stimulus of light. In every bird that I had an opportunity of examining, the pupil was contracted to a mere dot.

" There are no reptiles of any kind on the island, and the only insects I observed are three small species of *Curculio,* four of *Phalæna,* one of *Hippobosca,* two of *Musca,* one *Tipula,* one *Sphæroma,* and one *Oniscus.* The latter has multiplied astonishingly in the soft vegetable soil, and proved a great nuisance to us, creeping up the roofs of our tents and dropping thence upon our beds during the night. The common window-fly of the Cape was not observed until two months after our arrival; but before I left the island it began to be troublesome.

" The Flora of Tristan da Cunha is as copious, perhaps, as the situation and extent of the island would warrant us to expect; but with the exception of cryptogamous plants, it offers nothing of peculiar interest.

" The only plant on the island that approaches to the size of a tree is a species of *Phylica.* This plant occupies not only the whole of the plain, but has also spread over the face of the mountain, wherever its roots could insinuate themselves into the crevices of the rock. In favourable situations it grows to the height of 20 feet and upwards, measuring from 12–18 inches in diameter. Its trunk is extremely crooked and twisted, but the wood is hard, close-grained, and, according to the report of a ship-carpenter, who examined it, would make excellent timbers for vessels of 60 tons and under. Its bark possesses a slight degree of astringency. Owing to the lightness of the soil, and the frequency of high winds, these trees rarely stand upright, but lean against the ground, and cross each other in such a manner, as to make it a business of extreme difficulty to penetrate to any distance through the wood.

" Besides the *Phylica*, there are only two shrubby plants on the island, both of which belong to the genus *Empetrum*, and may be only varieties of one and the same species. They possess no quality to recommend them, but that they grow on the most barren spots, where nothing else could vegetate.

" Of the herbaceous plants, the most remarkable is a gigantic species of *Spartina* (*S. arundinacea*). This grass overruns the whole of the island, from the upper edge of the table land down to the sea-shore, accommodating itself to all soils and situations. It springs up in large close tufts, which when full grown, are borne down by their own weight, and lean upon each other in such a manner that a man may roll himself over them without any danger of sinking. Its stems grow to the length of 6 or 7 feet, and are of a solid, almost ligneous, texture, and covered with a profusion of leaves. This grass makes an excellent and durable thatch, and the young leaves are eaten by horses and oxen.

" The *Wild Celery* grows in abundance over all the low ground, and attains a great size, its stem sometimes measuring upwards of 3 inches in diameter. It possesses in a high degree the flavour of the *garden celery*, and by proper management might be brought to equal it in every respect.

" A species of *Chenopodium* (*C. tomentosum*), of a strong balsamic odour, is common round the cantonment. An infusion of the dried leaves of this plant is used as a substitute for tea by the Hottentots sent down in charge of the cattle. The soldiers employ for the same purpose the leaves of the *Pelargonium*, which scarcely yield to the others in strength of odour.

" The low ground is overrun with a species of *Acæna* (*A. sarmentosa*), a plant of no apparent utility, but an intolerable nuisance to such as have occasion to walk over the ground where it grows. Its fruit is a sort of *bur*, which on the slightest touch fixes itself on a person's clothes, and falling in an hundred pieces covers him all over with an unseemly crust of prickly seeds, not to be got rid of without infinite labour."

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The Alacrity, merchant brig, having arrived with stores and cattle at Tristan da Cunha, Captain Carmichael embraced the opportunity of returning by her to the Cape.

" We left the island," he continues in his Journal, " on the 31st March, and by the aid of a strong westerly breeze accomplished the voyage in ten days. It was not till eight days after our arrival that a French brig put into Table Bay, that had touched at Tristan da Cunha ten days before I left it.

" After remaining for about a month at the Cape, I embarked again on board the Marianne brig, of 180 tons, to return to Europe, having with several other officers of the regiment, been placed on half-pay. We sailed from Table Bay the 7th May, and in 14 days ran down to St. Helena. There, however, we were not permitted even to cast anchor, for which we felt the less regret, as the aspect of the island was not peculiarly inviting, and the Ex-Emperor of France was reported to be inaccessible to strangers. In the short stay we made off the anchorage, we remarked the extreme vigilance with which this important personage was guarded. A ship of war was stationed at every accessible point on the lee-side of the island, and others were cruizing to windward, boarding every vessel that hove in sight, ascertaining her country and destination, and charging her, unless in extreme distress, to steer wide of the island. After taking on board a few casks of water sent us from the Newcastle, we stood on, and on the morning of the sixth day made the island of Ascension.

"Having run down to the lee-side of the island, we there found H. M. S. Spey at anchor, and we dropped ours at a short distance from her. As this island is within a few days' sail of St. Helena, and directly under its lee, even small boats might navigate with little risk from one to the other. The British government, conceiving it possible that Napoleon might contrive to elude the vigilance of his guard, and effect his escape by some such conveyance, thought it advisable to station a cruizer here, with a view to take him up on his arrival, and to keep off any vessel that might be engaged by his adherents to look out for him and secure his retreat, while, as a further check on such a project, a party of fifty or sixty seamen with a proportion of officers, is stationed permanently on the island.

"This detachment, though settled here ever since the arrival of Napoleon at St. Helena, is still lodged under canvas. If we consider the sum of downright bodily suffering, independently of all privations, to which these men are exposed, with only a thin sheet of canvas to ward off the direct rays of a vertical sun, and without a blade of herbage to temper its still more oppressive reflection from a burning volcanic soil, we must say that the necessity ought to be urgent indeed that would justify the exposure of so many valuable lives to such a trial. The tents are pitched on the acclivity of a hill about four miles from the landing place, and close by a small puddle from which with care and industry they contrive to squeeze about 70 gallons of water in 24 hours. On this, the only spot in the whole island where the slightest trace of water has been detected, they have laid out a small plot of garden ground, and strive to rear a few of the more hardy culinary plants; but their labour is rendered nearly fruitless by the rats, which destroy the greater part of them before they come to maturity. These noxious vermin are supposed to have been introduced by an American vessel which was wrecked on the island some years ago, and they have since multiplied at such a rate that 1700 of them are said to have been killed by the party in the course of one month. They subsist chiefly on the eggs and young of the sea-fowl, which breed in myriads on the island.

" A suite of barracks and store-houses is now erecting close to the landing place; and at an enormous expense, it would appear, for the island itself affords nothing but the stones; the lime and timber are brought from the Cape, where these articles are no bargain, and the carpenters and masons also, at the daily hire of a dollar and a half a head. So destitute, indeed, is this miserable spot of every thing contributing to human comfort, that the ship stationed here is under the necessity of making a voyage from time to time to the island of Tristan da Cunha for wood and water, a voyage that may be reckoned at an average of six weeks or two months.

" A battery of 14 guns has been erected on a mass of lava that commands the anchorage. Opposite to the latter there is a smooth beach of fine white shell-sand, half a mile long, and flanked by projecting moles of lava. The border of the island is indented all round with ridges of the same material, which run a short distance into the sea, and break the continuity of the beach. The surface of these ridges consists of broken scorious masses, piled on each other in that sort of confusion of which a person may form a faint idea who has remarked the manner in which ice becomes accumulated when driven by the wind to the lee-side of a lake on the breaking up of a hard frost.

" The island is about 24 miles in circumference, and appears to be entirely of volcanic origin. Its surface is covered with numberless conical hills, from 200 to 2000 feet high, which were the spiracles of so many subterraneous fires. They are remarkably smooth, and apparently mere accumulations of blood-red scoria and cinders. The central ridge, or peak, estimated at 3000 feet high, is of a greenish hue, indicating a commencement of vegetation; but the low ground and the conical hills are entirely destitute of plants, with the exception of a species of *Euphorbia*, which I found growing luxuriantly in the fissures of the lava close by the shore.

" In the rainy season vast quantities of pumice are washed down from the hills, which, pulverized in its progress, is blown about by the wind, and fills the crevices of the lava with an impalpable dust. I have no doubt that this pumice dust would be found of service in polishing metals and marble, and as it is an abundant product of the island, it might be turned to good account.

" The crew of the Spey, as well as the party on the island, are fed during a certain season of the year on turtle. These reptiles come ashore in the night-time to deposite their eggs. A party is sent in quest of them, who turn as many as they want upon their backs, and leave them there without the power of moving, until a boat is sent round to fetch them home. The females alone are thus caught, the male turtles never coming ashore. They are of the species called the *Loggerhead*, and weigh from 300 to 600 pounds. The epidermis of this kind is as thin as parchment, and quite unsuitable for any of the purposes of real tortoise-shell; but I am inclined to think it might be converted to ornamental purposes of various kinds. If smoothed and underlaid with gold or silver foil, it would make elegant book-covers. It might also serve all the purposes for which shagreen is used.

" The officers of the Spey made us a present of a couple of turtles for sea stock, which weighed about 400 pounds. We killed one of them a few days after we left the island. It made excellent soup, but its flesh, as might be expected, was insufferably coarse. On opening it there were found about 200 perfect eggs, and twice as many half formed, having nothing but the yolk. These eggs do not ripen, it would appear, in regular succession, nor all at once, but in lots consisting of a certain number, such, perhaps, as the animal can lay in the course of a night, after which it returns to its own element and enjoys a respite for some time, till the next division comes to maturity. The eggs of the turtle are about the ordinary size of a hen's egg, but perfectly spherical. The external covering is a white pellicle encrusted with a calcareous matter that rubs off when the egg is roughly handled. The white never coagulates on boiling, but the yolk becomes hard, and has precisely the taste of pease-pudding. Each egg has a large dimple on it, probably to leave room for the expansion of its contents while exposed in the hot sand during the evolution of the young.

" The longevity of the turtle, under a total abstinence from food, has been frequently remarked. One of ours was brought alive to England, and during a passage of two months, lay on its back upon the quarter-deck without any attention but having a wet swab placed under its head, and a few buckets of salt water dashed over its body every morning.

" We quitted Ascension the 28th May, after remaining there 24 hours, and on the 2d June crossed the line in 23° 10′ under the impulse of a fine south-east trade wind, which followed us to about 4′ north, where, after an interval of one day's squally weather, we took up the north-east trade. I did not remark while crossing the line, either on this or any of my former voyages, that tremendous roll of the sea, which is said to prevail there, and which is attributed by theoretical philosophers to the increased oscillation of the ocean necessarily resulting from the greater diameter of the globe at the equator. It would require, indeed, no unusual powers of reasoning to prove, that in those parts of the ocean where the wind blows constantly and invariably from one point of the compass, without ever either swelling to a tempest or lulling to a calm, the waves can never rise to any dangerous magnitude. It is only during the calm that immediately follows a gale, or in that part of the sea which lies just beyond the sphere of its action, that this roll is ever remarked. It is, accordingly, in the latitudes of the variable winds, and off the great continental headlands, that it mostly prevails, and in no part of the ocean is it of more frequent occurrence, or more alarming magnitude, than off the southern promontory of Africa.

" We did not see many flying-fish or albicores until we crossed the line, but from thence to 22° north, we were daily surrounded by shoals of both. The former were of two species, the common *Exocœtus volitans* and the *E. evolans.* The latter is larger, much less abundant, and readily distinguishable during its flight by the purple colour of its pectoral fins. Numbers of both species, darting about in the dusk of the evening, struck against the rigging and dropped on board, while many more, flying lower, dashed themselves against the sides of the vessel, and fell dead or stunned into the water.

As no instance ever occurred of any falling on deck after the night was fairly set in, it may be inferred that they cease flying during the dark, probably because their enemies cease then to pursue them.

" The *Albicore* (*Scomber Thynnus*) seemed to weigh from 100 to 200 pounds. We hooked several, but our bonito tackle was too weak to hold them, and they invariably snapped either the line or the hook. The spring they make at their prey would, independently of their mere weight, break any tackle of ordinary strength. They dart four or five yards out of the water, and frequently catch the flying-fish at that height, at other times they follow it as it flies above them, and seize it the instant it drops into the water. From their constantly attending the course of the vessel, and our never observing any pursuing a different course, I am inclined to believe it was the same shoal that followed us the whole way.

" We no sooner parted company with the *Albicores*, than we fell in with the *Gulph-weed*, or *Sargasso* (*Fucus natans*). This singular plant, which alone enjoys the privilege of ranging over the ocean at large, forms at times entire patches of more than an acre in extent; at other times, its tufts arrange themselves in parallel lines at the distance of 20 or 30 fathoms asunder, in conformity to the direction of the wind. The weed itself is of a dull orange brown colour, but appears surrounded with a halo, the water seen through the branches, as well as that which immediately surrounds the outline of the tuft, being of a vivid cœrulean blue, strongly contrasted with the dark indigo hue of the sea. The small crabs, also, which nestle among this weed, are surrounded with a similar halo when they swim from one tuft to another.

" On the 8th July we came to anchor in Fayal Roads, and remained there for two days. The morning after our arrival the whole of us went ashore, and waited on the British Consul, Mr. Parkin, who, according to the etiquette of the place, introduced us to the Governor, a young military officer from Brazil, and afterwards to the Judge. He then took us to visit the American Consul, Mr. Daubeney, who showed us his house, the best built, by far, and best furnished dwelling in the island, with a small garden, neatly laid out, and kept in excellent order. From thence we strolled to a convent of nuns, from whom Mrs. Robertson purchased a parcel of artificial flowers of ordinary workmanship, and on our coming away had a kiss from the Lady Abbess, a matron-looking woman of fifty, a favour which we could not prevail on her to extend to the rest of the party. From the nunnery we went to the Franciscan monastery, but saw only one friar, the rest being engaged at a funeral procession. He was a lad of 16, habited in a black frock, with a white cord tied round his waist, the instrument of flagellation, but seemingly of too slight a texture to make any serious impression on his skin. Next morning we went, still accompanied by our obliging Cicerone, to view the house of the Spanish Consul, lately deceased, whose widow, a fine woman, and a native of the island, showed us the grounds, and was uncommonly polite and attentive to us. The house stands on an eminence, overlooking the town and bay, and commands an extensive view of the most romantic scenery that can be conceived.

"Fayal, or Villa Orta, contains about 4000 inhabitants, and, though not the residence of the Governor-General, is the largest and most commercial town in the Azores. It consists of one principal street, running parallel with the shore, and faithfully conforming to all its sinuosities. A number of minor streets, or rather lanes, branch from it in all possible angles but the right one. These streets were originally paved with blocks of lava, which wearing unequally away through time, have left them in a deplorable state of ruggedness. The houses are mostly old and decayed, the walls white-washed, the windows latticed, but rarely glazed, those on the ground-floor iron-grated, and all of them edged with a black funereal border. The convents are numerous, and apparently coeval with the first settlement of the island, but now bearing evident marks of that general decadence which impends over the faith that reared them.

"The common people are extremely civil to strangers, invariably saluting them as they pass, and the citizens and friars usually follow the same practice. The peasants go very poorly clad, some with straw hats, some with Montero caps of coarse cloth; the cart-drivers with long goads over their shoulders. The women wear long blue mantles, with enormous hoods, at the bottom of which you can scarcely discern the human face divine.

" The island, to a certain height, is cultivated like a garden. The fields are small, but regular, and bear crops of wheat and maize, the former ready for the sickle, the latter half grown, and to be reaped in September or October. The lea fields are covered with a crop of yellow lupine, which when it springs to a height of three feet, is ploughed down to serve as manure. The soil is extremely light, and easily laboured.

" The riding cattle are mules and donkeys. Horses are rarely used, being considered dangerous on account of the imperfection of the roads. The carts are drawn by a couple of oxen, yoked by the neck, and having their near horns attached to each other by a thong, a necessary precaution against their injuring passengers in the narrow lanes. These carts are extremely rude and clumsy, the body solid, shaped like a battledore excavated in the fore part to receive the nether end of the oxen. The wheels are of three pieces of solid plank, fashioned like those of the Irish car, the iron binding several inches thick, with the external edge not above an inch thick, admirably adapted for cutting up the lanes into ruts, which they do in no time, to the depth of ten or a dozen inches through the solid lava. In this process of grinding they make a horrible creaking noise, which, when half a dozen carts follow in a string, is heard at a vast distance, sounding like an ill-tuned band playing an Irish lament.

" All the butcher-meat required for the consumption of the town is slaughtered on Friday, when the citizens must lay in their stock for the week. Beef and mutton are pretty good at 3½*d.* per lb.; poultry good at 6*d.*; eggs remarkably large at 2*d.* per dozen; potatoes tolerable at 1*s.* 6*d.* a bushel; bread execrable, black, and sour; fish plentiful, and in great variety.

" Fayal owes its origin to subterraneous fire, and seems to have suffered some tremendous convulsion, by which whole hills and headlands have been overturned. On its summit there is a crater (*caldero*) four miles in circuit, having a lake at the bottom, round which the *Dicksonia arborescens* grows in such profusion, that the silky down of its stems is used by the principal inhabitants as stuffing for their mattresses.

"The town exports a great quantity of white wine, of a good quality, selling at from £20 to £25 a pipe. It is made in the adjacent island of Pico, mostly the property of the merchants of Fayal. The peak of Pico is estimated at 1172 toises high. On the summit, which is of difficult ascent, there is an enormous crater, from the centre of which rises a subsidiary cone, as if the summit had sunk to a certain depth into the bowels of the mountain, without any derangement of its form.

"The population of the island of Fayal is computed at 22,000 souls, an immense multitude for a mere speck of land not above 40 miles in circumference. It is accordingly crowded to redundance, and to all appearance wretched. Sailing along the coast, we could not perceive, in a great tract of cultivated land, a single farm-house, or any building whatever, except here and there a huge monastic pile that seemed to lord it over the circumjacent grounds. To see the dwellings of the peasantry you must traverse the fields, and there, if you look sharp, you will find their wretched hovels thrown up against the corner of the stone fence, a fitter residence for hogs than for human beings."

Captain Carmichael soon found that the crowded metropolis of London was not congenial to his retired habits, and he spent the winter of 1817–18 in Edinburgh; but even there, the opportunities afforded him of cultivating scientific acquaintances with less pain to his reserved manners, did not compensate for the pleasures of a country life. He felt that cities were rather fitted for the habitation of the inquirer and describer than of the observer, and in 1818 he returned to Argyleshire, to hold yet more familiar converse with the scenes of his childhood, and to find in them those rare or unknown productions which had escaped his early notice. During the years 1818–19 and 1819–20, he resided near Oban, and principally with that sister to whom allusion has been made already, employing his time in making a fair copy of the journal from which the following extracts are taken, as well as in collecting the *Phænogamous* plants and *Mosses* of the neighbouring districts.

In 1820, the farm of Ardtur, situated near Lismore, the place of his birth, was advertised to be let, and, being well calculated for the residence of a naturalist, he rented it. It was there that he turned his inquiries almost exclusively to *Acotyledonous* plants. *Lichens*, *Fungi*, and *Algæ*, in their turn excited his curiosity, and in each of these departments he was fortunate enough to add greatly to the list of Scottish species. If success is ever due to industry, he might claim it. The objects that had few or no charms for others, or were too common to attract their notice, possessed the highest interest for him. Each leaf, each rotten branch, was examined by him. No bank, no tree, was passed over; whatever the state of the weather might have been, he might still be found pursuing his researches, and it is a cause of happiness to his friends, that when his cold ashes claim no notice, the days on which he thus laboured are bright with the fruits which he gathered.

But the *Algæ* constituted his favourite pursuit. Conveniently situated in respect to the sea, the little farm of Ardtur, which he has rendered well known in the "*British Flora*," possesses a shore of about one-third of a mile in extent, which is varied with occasional rocks and small islands, where the tide flows rapidly, but is in general smooth, with a gentle declivity towards the deep. There is thus a considerable extent of shore left dry by the ebbing of the tide, and a favourable field opened to the Algeologist.

Urged by these local advantages, as well as by the representations of Dr. Hooker, who gave him the free use of his library, Captain Carmichael applied himself to the study of marine plants with the utmost devotedness. Every day found him watching the receding of the tide, and he continued for several years examining the stations which he had searched times without number before, and that with as much minuteness as if they had been new to him. There was much that was remarkable in this part of his conduct, and his success shows the difficulty of setting limits to the *Flora* of any particular country, as well as the impossibility of discerning where botanical discovery may cease. He never wandered beyond the limits of his little farm.

During his intervals of relaxation from these his favourite pursuits, he might generally be found reading the new publications of the day. Exceedingly silent in company, he disliked visiting, and, being unmarried, the hours of his solitude were many, and generally improved. The course of his reading was extensive, and he read with the eye of a critic. He often took a general outline of the plan of the author, and made such observations as show the workings of a philosophic mind.

The following reflections, drawn forth by the remarks of different authors, are so just, and so fully expose the impropriety of reasoning, with a false love of wisdom, from final causes, that they cannot be too frequently considered. "It is a mistake to suppose that the glory of God is to be promoted by that puling philosophy at present so much admired, which serves to please and amaze the public at the expense of the feelings of the man of science, whom it disgusts. True religion must always grow with true knowledge, and the pious contemplations of pious men, ascribing final causes for facts with which they were but partially acquainted, has often brought ridicule on that wisdom which they would exalt, and contempt on the doctrines which they would support. The passage which calls forth these reflections is this:

" 'Jetés,' says our author, 'sans defense au milieu des voraces habitans de la mer, voyageant par troupes nombreuses que des reflets brillans et argentés font distinguer au loin, les poissons volans (*Exocœtus volitans*) eussent sans doute disparu d'entre les êtres vivans, si la nature ne leur avait donné, dans leurs nageoires pectorales, des moyens propres à s'échapper des vagues, et à voler a la surface des eaux dans lesquelles leurs ennemis habituels les poursuivent sans cesse.'

"The above paragraph sets out with a truism that might as well have been omitted. Constituted in all other respects as it is, there is no denying that the Flying-fish, if deprived of its pectoral fins, must soon cease to exist; but so would every other fish subjected to a similar amputation. By the same rule of reasoning it would not be difficult to prove that the human race owe their existence to their legs, for if they were docked of their locomotive members, the species must soon be annihilated. But until mankind lose their legs, and the '*Exocœtus*' their wings, we may rest assured that both will multiply as fast as the sea and the earth will supply them with food.

"Sound reason has not a more active or insidious foe than this morbid sensibility, which addresses itself to the heart instead of the head, endeavouring to work on our sympathy at the expense of our understanding. This is the rock that lies perpetually in the way of sentimental travellers and novelists, and on which they never fail to strike. They select for themselves an individual or a species, a flea, or a flying-fish, or a Welsh Curate, no matter what it is, provided it be sufficiently weak, and can be made sufficiently miserable. They make this a type, clothe it with all the attributes of interest, and overwhelm it with all the circumstances of love, then cry over their work till their imagination becomes heated, and they see in the whole round of creation nothing but rapine, oppression, and misrule. These enthusiasts never raise their eye from the individual that has thus fixed their attention, or look up to the steady march of nature, in which partial evil is made subservient to universal good. They are ever sighing after the happy age of gold, when the flying-fish played at hide and seek with the albicore, the wolf slept with the lamb, and the lion ate grass like an ox. But people of sober minds, who suffer not their imagination to run away with their judgment, reasoning on what has been from what actually is, are agreed that such an age never did exist, and never can exist, *while the laws remain in force which the Almighty has imposed on his sublunary works.*

"From the astonishing power of reproduction inherent in the smaller tribes of animated beings, they would in a short space of time overstock the air, the earth, and the waters. It may thence be inferred, that this faculty was bestowed on them with a view to meet the demands of those larger animals of which they serve as the natural food. The herring and the pilchard of our own seas, are preyed upon by foes, more numerous, and more formidable than those which pursue the flying-fish within the tropics; yet it has never been remarked that the shoals which annually visit our coasts are falling off in their volume. The boundless wastes of Africa are covered with herds of antelopes, buffaloes, and wild horses. In the woods that skirt those plains, the lion, the tiger, and the panther lurk for their prey. It is to be presumed that they have followed the same system from the period of their creation downwards, yet those regions are to this day as well stocked with graminivorous animals as if lions and tigers had never existed. This consideration, it is to be hoped, will set the hearts of sentimentalists at ease, or assuage, at least, their sympathetic feelings."

The following passage in Darwin's Physiologia also leads him to the further examination of this subject:

" The bitter, narcotic, and acrid juices of plants, are secreted by the glands for the defence of the vegetable against the depredations of insects and other animals."—*Darwin's Physiologia.*

" This is mere assertion, specious, no doubt, but, like many of the author's assertions, utterly unwarranted by facts. It is an acknowledged axiom that nature does nothing in vain; yet we cannot well imagine her more idly employed than in furnishing plants with that dubious sort of armour which rarely contributes to their security, and proves, in numberless instances, an incitement to their destruction. In the first place, it may be safely affirmed, that there hardly exists a vegetable, some part of which does not serve as food to some description of animals. But in order to form a correct judgment on this matter, the history and œconomy of the plant must be studied in the country where it is indigenous. When plants are transported into foreign climates, the animals for which they served as food seldom or never follow them. To mention a few among a multitude of examples in disproof of the above position, the leaves of the *Calla Æthiopica*, the most acrid of plants, are the favourite food of the *Sphynx lineata* in its larva state. In Mauritius, the *Blatta Americana* devours the leaves of the *Argemone Mexicana*, equally acrid, and more nauseous than the *Calla*. In the same island the fiery berries of the *Capsicum* are eaten by the *Gracula tristis* or *Mayana*, and greedily devoured by the common poultry. The common *Nettle*, whose sting is poison, is furnished with numerous and well known parasites, and I have no doubt, that if the *Upas* tree itself, of which the learned physiologist has given such a terrific description, were closely examined, it would be found covered with insects.

"Such being the fact with regard to the inferior animals, let us see how matters stand with respect to man. Our East Indian commerce furnishes ample proof that the most pungent products of the vegetable kingdom afford no security against depredation; and the unlimited consumption of opium and tobacco is equally conclusive against the infallibility of narcotic juices. On the contrary, like the half-reasoning parent of combs, as Johnson calls him, who is destroyed for the sake of his tusks, these vegetables are destroyed in countless millions for the sake of those very juices which were given them, it seems, for their protection. It savours too much of human views of partiality and patronage, to fancy nature conferring privileges on certain plants for the purpose of exempting them from the common lot of the vegetable creation, which is evidently intended to serve as food for the higher description of beings, as these, after their death and decomposition, serve in their turn as food for vegetables. The plants that appear to be the least liable to animal depredation, are certain tribes belonging to the class '*Cryptogamia*,' the *Ferns*, *Lichens*, and *Mosses;* yet none of these, so far as I know, are furnished with deleterious juices."

He is led to carry the same views farther, by a somewhat similar passage in Huber on Bees, which asserts that all the wisdom, ingenuity, and power of the Bee, were given exclusively for the benefit of man.

" There is something ludicrous, if it were not a gross impeachment of divine wisdom, in this sentiment, which has, nevertheless, established itself among us as a standing maxim or article of faith, and pervades all our writings, as well as our ordinary style of language. Whatsoever we have subdued by fraud, force, or ingenuity, becomes, according to this sweeping canon, our indisputable property, and was made entirely for our use.

" It was, no doubt, part of the scheme of creation, that man should convèrt to his use such of the productions of nature as were necessary to his physical existence. So far it may be admitted, they were made for his use. But is he singular in this respect? Is it not a general system of adaptation, which is common to him with every organized being upon earth? Man draws the greater part of his nourishment from the vegetable kingdom, but so does a vast proportion of the inferior animals, while others share with him in the spoil of the animal kingdom. Man appropriates to himself the produce of the industry of certain classes of animals, but does that establish the principle, that those animals were made for his use, and for no other purpose? This we can hardly admit, without the counter admission, that man was made for the use of those animals that derive their nourishment from his carcass, or from the produce of his industry. Thus the mite, lodged in the crevice of a Cheshire cheese, and the familiar little insect, the emblem of love, that sucks its aliment from human blood, have a right to consider dairy-maids and beggars' brats as created expressly for their use. A closer study of the œconomy of nature would go far to cure us of this folly, by opening to our view that system of mutual dependence and reciprocation of services established throughout the whole chain of existence, which is altogether irreconcileable with the gratuitous assumption that every thing was made for us. The word of God, which gives man the rule over the creatures, nowhere says they were created *for him*."

The reserve which characterized Captain Carmichael's manners in company disappeared in the society of his intimate friends. His greatest delight was to meet with a person with whom he could converse freely on general topics, and then the range of his knowledge, the acuteness of his observations, and the accuracy of his reasonings, were fully elicited. On these occasions he generally suggested a subject of discussion, taking obvious pleasure in grappling with the intellect of his friend, and ascribing to his reasonings the measure of merit due to them. His favourite topic for conversation was the progress of knowledge and free inquiry.

"In the arts and sciences," he once said, "in astronomy, chemistry, medicine, the progress of improvement in modern times has been rapidly advancing, but in law, and the other moral sciences, the impulse has been in the opposite direction. Our ancestors were, on those topics, it seems, wiser than we are, and their mandates are to be propped and protected from the sacrilegious hand of innovation as if they had been the oracles of divine truth. The reason is obvious enough. The former are open to the whole world, nor has any one the power, however it might be his interest, to obstruct their progress; the latter, on the contrary, are strict and inveterate monopolies, in the possession of powerful and active corporations, who feel deeply interested in guarding them from the most distant approach of change. This is the clog that impedes the wheel of reform, and which, sooner than suffer it to revolve, would see the whole machine of government torn to pieces."

With these sentiments, it may easily be supposed that he was not of that number who look to the future with despondency. A strong regard to general improvement, and hope, which loves to paint a desired object reflecting the sunbeams, made coming ages appear bright to his eye, and in one of these discussions concerning the past, and the influence of science on the future, in which he delighted, he thus elegantly expressed himself: "There is in society a numerous, and, no doubt, well-meaning class of people, who regard the human race as in a progressive course of degeneration. These admirers of the past view the march of time through a moral telescope, one end of which points to what has been, the other to what will be. When they look at the former, every thing appears magnified and softened, and surrounded with a brilliant halo; but when they would scan the latter, instead of turning their instrument, they apply their eye to the opposite extremity, and thus see the field of view contracted, and the objects scattered over it shrunk almost to atoms."

He had pursued his daily search for plants during four years before the writer of this memoir became acquainted with him; yet then, and for several years after, he went to "the ebb," wading perhaps for hours, sometimes up to the knees, sometimes much farther, and few spring-tides passed, in which he was not rewarded with the new or the rare. The day on which he got nothing, he said nothing, and he wished to forget it; but the next day he went forth in hope, as to a field in which fresh laurels might certainly be won.

His disregard to bodily comforts on these occasions proved very prejudicial to his health. Instead of changing his wet clothes upon his return, he sat down to examine his plants. If he found any to be new, he proceeded, while they were yet fresh, to figure them, as he always maintained that the delicate fibres of the *Algæ* were torn in drying, so that they never re-assumed their natural appearance. With clothes all dripping he sat down to this office, which the fastidiousness of his taste, and his love of correctness, often rendered tedious, and though shivering with cold, he always persisted in his work till it was finished, by which time the water had partially evaporated before a large fire, and he maintained that it was unnecessary to change his dress. Such habits, in a climate not the most favourable, could not fail to affect the constitution of the most robust, and this was eminently the case with that of Captain Carmichael. He did not calculate that while he gratified his botanical ardour, he brought debility and decay on his bodily system; or that he rendered a speedy grave, and shortened opportunity of acquiring knowledge, as certainly the consequence by sitting in damp clothes, as he would have admitted ignorance and uselessness to be the necessary results of non-exertion. He contended against nature, but she prevailed. His strength sensibly decreased, week after week, till September, 1827, when, without any previous change in his habits, or any illness to indicate the approach of death, it was found that he had not appeared at his usual hour in the morning. There were none in the house but domestics—they entered his room and found him in bed,—but the pillow he rested on was that of eternity; he had gone from the contemplation of nature to the presence of nature's God!

## ON THE PLANTS WHICH ARE CALCULATED FOR THE FORMATION OF FENCES IN THE ISLAND OF JAMAICA. By James Macfadyen, of Jamaica, M.D.

*(Read before the Jamaica Society for the Promotion of Agriculture and other Useful Arts.)*

[Communicated by Dr. Macfadyen.]

There is perhaps no part of rural œconomy, as practised in this country, that appears more defective to the experienced agriculturist, than what relates to the care of our roads and fences. Yet nowhere can these be more requisite, or, were they properly attended to, would prove of greater service. The most promising crops may be irreparably injured in one night by the inroads of cattle, and the loss sustained from stock on badly constructed roads, has been known, on some estates, to exceed two thousand pounds.

It is my intention to confine myself at present to the subject of enclosures, trusting that if there be little novelty, there may be something useful in my remarks.

In establishing a fence, we have first to select the materials of which it is to be formed; and, secondly, to take care of it after it has been made.

Fences are of four kinds, the ditch, the wall, the paling, and the live fence. The three first are unsuitable to this country; the ditch, from its lodging stagnant water, and soon becoming filled up with the soil washed into it by the heavy rains; the wall, from its harbouring vermin; and the paling, from the expense of the first cost, and, in this climate, the rapidity of its decay. It is the live fence only we shall notice, as being the least expensive, the most durable, and best fulfilling the purposes intended.

There are many plants in this country well adapted for a live fence. In employing such as we have reason to think have never yet been tried for the purpose, we ought always to make choice as the subjects of our experiments, of those which are most addicted to throw up suckers from the root, and to branch near the bottom of the stem, as it is one of the best qualities of a fence to be thick and bushy near the ground. We have also to take into consideration the character of the climate, some plants being adapted to a dry, and others to a wet one. Hence the enclosures of parishes which are only occasionally visited by showers, ought to differ from those of districts where the supply of rain is abundant.

1. One of the commonest fences in the country is the *Pinguin* (*Bromelia Pinguin*). Its advantages are, that it thrives in almost every climate, that it serves the purpose of a fence almost as soon as planted, and requires very little labour to keep it in order. On the other hand, it has always a ragged and unsightly appearance, and, unlike the *Hawthorn*, the *Lime*, and the *Logwood*, rather defaces than beautifies the aspect of a cultivated district. It is also a harbourage for one of the most destructive vermin the island is scourged with. Altogether, it ought never to be planted from choice, there being other plants answering the purpose equally well, and being free from its defects. It will, however, in all probability, be always a favourite in this country, the little trouble required in planting and keeping it in order, recommending it to the characteristic indolence of the inhabitants. This plant is cultivated from suckers, which take root readily. In the wet parishes it thrives best

when planted on the top of the bank thrown up in forming the ditch, so that the superabundant moisture drains off readily. In the dry districts, on the contrary, where it is apt to suffer from long continued droughts, it ought to be set in level ground.

2. The *Spanish Dagger* (*Yucca aloifolia*), a species very common in this country, has also been cultivated for fences. It is not so unsightly as the *Pinguin*, but requires time before it fulfils the purpose of a fence, the suckers or heads from which it is planted not acquiring the requisite height till the end of the first year. Upon the whole, it ought never to be applied to this purpose, being unornamental, and by no means so useful as many others. It must, at the same time, be confessed, that in the flowering season it is far from ungraceful, its stem being covered with dark spiny leaves, and surmounted with its snowy thyrse-like inflorescence.

3. Several *Cacti* are employed for fences; but more commonly in the East Indies and the Windward Islands than with us. This tribe is well adapted for the dry districts, their structure enabling them to be content with a scanty and occasional supply of moisture. Those which are distinguished by the name of *Cerei erecti*, as well as some of the *Opuntiæ*, are what are most commonly used. They form pretty good fences. We might, however, object to their appearance, as conveying an idea of sterility; and to their being easily cut or broken down. Altogether, they are only admissible where none of the other plants we proceed to enumerate will grow. Like all the succulent family, their propagation is easy, as they take root readily from cuttings or joints; and when the old plant dies and decays, suckers come up. Of these, one (or more if requisite) may be preserved, and planted in the place of the old one, the stool of which ought previously to be removed.

4. We now come to a different description of plants, in the cultivation and training of which more skill is required on the part of the husbandman. As the same system of management suits them all, we shall dwell more particularly on the cultivation of the *Lime* for the purpose of a

fence, our remarks on this head being applicable to all the rest.

The *Lime* (*Citrus Limonia*) is a tree of little elevation, loftier than the *Citron*, but lower than any of the other individuals of the *Orange* tribe. In general aspect it is regular, with a yellowish-green leaf, oval-pointed, the length double the breadth. The corolla is delicate, the stamens from 20 to 30 in number, and the pistil lengthened out, or sometimes wanting. The fruit is a berry, small and ovoid, its pericarp or rind thin, yellow, aromatic, interiorly adhering to the pulp. The perisperm is composed of many cavities filled with a whitish aromatic acid pulp. The seeds are small, externally yellowish, internally white.

This is a native of the East, having been unknown to the ancient Greeks and Romans. It was first brought, along with the *Orange*, into Syria and the adjacent countries bordering on the Mediterranean, by the Arabs, they having become acquainted with it in their conquests in the east. From thence it found its way, during the crusades, into the southern districts of Europe, where it has since continued to flourish. It was probably brought to these islands by the Spaniards, at an early date after their discovery.

The *Lime* is of rapid growth, forming, if proper care has been taken, a fence in two years and a half. It is best raised from seed, sown in the line we wish the fence to be established. It prefers a cool and rather moist climate, and a soil of loose rich mould. It often succeeds even in wet soft land, where the logwood fails. The land in which it is to be planted should always undergo some previous preparation, but as this is seldom attended to, the seeds or roots being commonly placed on a hard, impervious, and, it may chance to be, meagre soil; no attempt having been made to loosen the cohesion of the particles by tillage, or to enrich the ground by proper manures and composts, it is no wonder if the fence frequently comes up straggling and stunted, with large gaps, and of a sear and sickly aspect. The soil, indeed, in this case, requires as much careful preparation as in any other branch of cultivation. When this is attended to, the roots penetrate the loose mould easily in search of nourishment, and our plants spring up healthy and vigorous.

The same care should be continued during the first three or four years. Weeds are to be cleared away, and the soil loosened occasionally, laying up a few inches of soil about the roots. It will even be advisable to apply occasionally some well digested and fresh soil. With such precautions, we cannot fail in establishing a fence, composed of plants in high and vigorous health. For the first year and a half, or two years, this will be sufficient. About the end of this period, however, we commence pruning; and on the time and manner in which this is performed, much of the future beauty and utility of the fence depends. Many commence this process too early, scarcely giving the plants time to shoot before they begin to curtail them. The consequence is, that the hedge becomes useless, for instead of thickening, as was intended, it gradually fills with shrubs of numerous, but weak and stunted branches, having the same appearance as those plants in pastures which have been subject to be frequently cropped by stock. A premature decay is brought on, the repeated removal of the young shoots exhausting the parent, by stimulating it to over exertion. Instead of this, it should be laid down as a rule, that the fence be undisturbed till it has attained the height at which it is to remain, viz. five or six feet from the ground: when, for the first time, a gentle pruning becomes necessary. We ought to leave the main stem untouched, shortening the side branches, and suffering those near the root to grow long, and gradually tapering up in a wedge-like form. By this means young lateral shoots will spring out and fill up every interstice, till the whole presents in time the appearance of a solid leafy wall. This pyramidal form we ought in our future prunings carefully to preserve. By this means all the branches, those at the bottom as well as the top, will be alike exposed to the sunshine and the rain. Suckers will spring up, branches from the bottom of the stem will spread out and again divide, so that the base of the fence being broad and thick, it will keep out even the smallest kinds of stock.

Whereas, were we, as is usually the custom in this country, to round off the top, we should have the stems near the root naked and bare, with wide intervals, allowing free ingress and egress to all kinds of destructive stock.

When we wish to fill up gaps in a fence of this kind, it is requisite, after preparing the soil, to make a selection of healthy vigorous plants. Previous to putting them in the ground, we ought to cut down those on each side to a short distance from the surface, so that an opportunity may be afforded for the new plants to establish themselves.

When a hedge has been neglected, and allowed to grow up high, it is still capable of being formed into an useful fence. For this purpose, it must be cut down close to the ground, at the same time loosening the soil about the roots. If this be done, numerous shoots will soon make their appearance; which, if pruned into the shape formerly recommended, will shortly form a beautiful and sufficient fence.

5. We now come to the *Logwood* (*Hæmatoxylon Campechianum*), another excellent material for fence-making. It may be raised from seed or suckers. The plants employed should be at least a year old. Previous to planting, we ought to assort them, separating the weak from the strong, so that plants in different states of size and strength be not placed together, the consequence of which would be, that the hedge would not be uniform in growth, the stronger individuals becoming luxuriant and outgrowing their neighbours, which would soon become sickly and die. On the contrary, when the plants are in the same condition of health, and of the same age, as those around them, they go on together keeping pace in their growth. The system of pruning recommended for the *Lime* applies equally to the *Logwood.* It should be allowed to stand untouched till the end of the second year, or till it has attained the height at which it may remain. We are then to trim the lateral branches, leaving those at the bottom long, and pruning gradually shorter as we approach the top. If treated in this manner, it forms a hedge superior to almost any other, not excepting even the

*Hawthorn*, which in appearance it so much resembles. It is unfortunately, however, invariably mismanaged, the Negro who is directed to trim the fence merely shortening the exuberant branches without any attention to form, the longer ones being partly cut through, and interlaced with the neighbouring branches. Hence, while the fence is thick and bushy at the top, where it is least required, it is thin and straggling below.

The *Logwood* prefers a drier soil than the *Lime*, so that where the fence passes over a wet piece of land, we ought to introduce the latter to complete the line.

6. The *Bontia daphnoides*, or *Wild Barbadoes Olive*, forms a beautiful fence. It is destitute of thorns, and protects solely by the closeness with which its branches grow, presenting an almost impenetrable barrier. 7. The *Jerusalem Thorn* (*Parkinsonia aculeata*); 8. the *Barbadoes Pride*; 9. the *Mimosa Nilotica*, or *Gum-Arabic Tree*, as it is improperly called; and, 10. the *Erythrina Corallodendron* or *Coral-Tree*, (known among cultivators of *Cocoa* by the name of *Madre de Cacao*,) have all been employed in fence-making, and demand the same treatment as the *Lime* and the *Logwood*. The two last named are of peculiarly rapid growth. I may here mention, that in the drier districts it would be expedient to give a trial to the common *Ebony* (*Amerimnum Ebenus*, *W.*). It is of rapid growth, and flourishes in river-courses with scarcely a particle of soil, frequently attaining the height of 20 feet. Altogether, it is probable it may prove a good substitute for the *Cacti* and the *Pinguin*, which deface the vicinity of Kingston.

11. The *Bamboo* (*Arundo Bambos, L.*),* if carefully attended to, is capable of forming a very excellent fence. It should be trimmed with a flat top; suckers as they spring up being carefully removed, and only the lateral shoots allowed to remain. This description of fence has the disadvantage of harbouring vermin, and unless great care be taken,

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* I might have noticed here the *Rosa involucrata*, which has been found to form an useful fence.

strong thick suckers will spring up, and produce an unsightly appearance. It also exhausts the soil in the neighbourhood, its rapid growth demanding all the moisture and nourishment within reach. Hence, not even the hardiest weed can thrive in the vicinity of *Bamboos*, not so much from any thing deliterious in the shade, but because they so completely deprive the soil around of moisture and nourishment. Thus, instead of protecting springs, they soon dry them up; the rapidity of their growth, which exceeds that of almost any other plant, speedily draining all the sources of water.*

12. I may, in conclusion, mention a few plants which promise to fulfil the purpose of an ornamental fence. Such is the *Justicia picta*, or *variegated-leaved Justicia.* This ought to be trimmed with a level top. The *Pomegranate* also is peculiarly suitable. I am not aware that the *Lawsonia inermis*, or *Tree Mignonette*, has been tried. There is no doubt, however, of its succeeding. The *Cuphea viscosissima*, *Allamanda cathartica*, *Gardenia florida*, and several others, might be added to this list.

As for the bordering of garden walks, I may merely allude to the *Rosa semperflorens*, *Euphorbia Pseudo-Ipecacuanha*, and the *Justicia pectoralis*, or *Balsam-herb.* The *Portulaca pilosa*, the *Sesuvium Portulacastrum*, and the *Heliotropium curassavicum*, have all been tried in the Bath garden.

These few remarks are submitted to the Society, in hopes of directing to this subject the attention of some member possessing greater opportunities of practical observation. It is, indeed, a reproach to our husbandry, that one of the first objects to which attention ought to have been directed, has been in every way so much neglected. Possessed of the best materials for fence-making that any country can boast, we have the worst enclosures, and though two or three years be sufficient to establish even those kinds which are the most tardy in their growth, we prefer going on in our old slovenly method. It is to be hoped that the labours of this Society may not be ineffectual in improving this, as well as other defective branches of our rural œconomy.

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* *Bamboo* fences are peculiarly well adapted to pasture-land, the cattle browsing on the young shoots keeping down the growth, so that very little additional care is required.

# ILLUSTRATIONS OF INDIAN BOTANY;

## PRINCIPALLY OF THE SOUTHERN PARTS OF THE PENINSULA.

By Richard Wight, M.D., &c. &c.

[*Continued from page* 360 *of Volume II.*]

## XXI.

## ÆGICERAS FRAGRANS.

Pentandria Monogynia. Nat. Ord. Myrsineæ.

*Cal.* 5-partitus, foliolis oblique imbricatis. *Corolla* hypocrateriformis. *Filamenta* inferne connata. *Antheræ* sagittatæ, loculis cellulosis. *Ovarium* polyspermum. *Stigma* simplex. *Theca* coriacea, cylindracea, follicularis, monosperma. *Semen* intra thecam germinans, integumento incompleto calyptriformi. *Albumen* 0. *Embryo* erectus. *Cotyledones* brevissimæ. *Plumula* conspicua.—Arbor *parva, littoralis, inter* Rhizophoras *intra tropicos proveniens, sed usque ad lat.* 34° *austr. extensa.* Folia *sparsa, integerrima, paginæ superioris excretione salina.* Umbellæ *terminales.* Flores *albi, fragrantes. Br.*

Ægiceras *fragrans.* (Suppl. Tab. XXI.)

Æ. fragrans. *Kon. in Ann. of Bot. v.* 1. *p.* 129, *cum Ic. Br. Prodr. v.* 1. *p.* 534.

Æ. majus. *Gœrtn. de Fruct. v. i. p.* 216. *t.* 46. *f.* 1. *Willd. Sp. Pl. v.* 1. *p.* 1185. *Roem. et Schult. Syst. Veget. v.* 4. *p.* 511.

Rhizophora corniculata. *Linn. Sp. Pl. p.* 635.

Mangium fruticosum corniculatum. *Rumph. Herb. Amb. v.* 3. *p.* 117.

A stout, very ramous, milky *shrub,* 10 or 12 feet, rarely more, in height. *Branches* round, glabrous; *bark* brown;

young *shoots* somewhat 4-angled. *Leaves* alternate, opposite, or sometimes three together, obovate, obtuse, immarginate, entire, glabrous, coriaceous; speckled beneath with darker coloured spots; both sides perforated with numerous small pores, scarcely visible to the naked eye. *Umbels* terminal, simple. *Flowers* pedicelled, numerous, white, on a thick, short, woody *peduncle.* *Calyx* 5-parted; *segments* contorted, membranous on the margins. *Corolla* hypocrateriform, 5-cleft; *segments* lanceolate, acute, reflexed, as long as the tube; *tube* hairy within, a little longer than the calyx. (In the drawing the tube is represented somewhat too long.) *Stamens* 5; *filaments* firmly united at the base into a tube, externally hairy, and edged with a thick downy ring; free portion of the *filaments* subulate. *Anthers* oblong, 2-celled, opening longitudinally. *Pollen* lodged in a double series of smaller cells, formed by numerous firm transverse partitions, separated by a common longitudinal one. *Pistil: germen* superior, cylindrical; *style* tapering, the length of the stamens; *stigma* simple. *Pericarp* a curved, rounded, acuminate, smooth, 1-seeded *follicle,* opening on the convex side. *Seed* conformed to the follicle; *radicle* superior, connected with the receptacle by a long flattened thread, (funiculus; integumentum incompletum? *Br.*) *cotyledons* elongated, semi-cylindrical. *Embryo* inverse, conformed to the seed.

This plant is a native of salt marshy ground on the banks of rivers near the sea. Several of the mouths of the Cavary which enter the sea in this district afford situations favourable for its production, and in such places it is very abundant, flowering and ripening its fruit during the greater part of the hot season.

SUPPL. TAB. XXI. A.—A branch with flowers and fruit. *Fig.* 1, Flower cut open and showing the stamens. *Fig.* 2, Stamen; the anther showing the pollen-cells. *Fig.* 3, the Pistil. *Fig.* 4, Fruit from which the theca or follicle is removed; showing the Embryo with its imperfect calyptriform integument, &c., *natural size.* The rest of the dissections are slightly *magnified.*

## XXII.

## COMBRETUM HEYNEANUM.

Octandria Monogynia. Nat. Ord. Combretaceæ.

Gen. Char. *Calycis limbus* infundibuliformis, 4-lobus, deciduus. *Petala* 4, inter lobos calycis inserta. *Stam.* 8, biserialia; ex his 4 petalis opposita altius inserta et longe exserta. *Ovarium* 2-5-ovulatum. *Stylus* exsertus acutus. *Fructus* 4-pteri, 1-locul., 1-spermi, indehiscentes. *Semen* angulatum, pendulum. *Cotyledones* plica media reflexæ cruciato-divaricatæ.—Frutices *arboresve subscandentes.* Folia *sæpius opposita integerrima.* Spicæ *terminales et axillares interdum paniculatæ.* DC.

Combretum *Heyneanum;* scandens, foliis oppositis ellipticis acutiusculis coriaceis glabris basi in petiolum attenuatis, spicis paniculatis axillaribus terminalibusque folio brevioribus, bracteis minutissimis, calyce intus villoso. (Suppl. Tab. XXII.)

C. Heyneanum. *Wall. Cat. of E. Ind. Comp. Mus. n.* 4001.
C. Coromandelianum. *Wight, MSS.*
C. laxum. *Roxb. Hort. Beng. (non alior.)*
Verragay. *Tamul.*

A large, scandent *shrub.* *Bark* pale brownish-coloured, smooth; *branches* rounded. *Leaves* opposite, petioled, broad, elliptico-lanceolate, obtusely acuminate, glabrous, entire, slightly decurrent on the petiole, between 4 and 5 inches long, and about 2 broad, of a light shining green colour. *Spikes* panicled, axillary, usually alternate, but sometimes opposite, occasionally forming a rather large terminal panicle. *Flowers* small, white, furnished at the base with a *bractea,* but so small that it is not easily seen, unless closely looked for. *Calyx* subcampanulate, superior, 4-cleft, hairy within; *segments* ovate, acute, reflexed. *Corolla* of 4 small white obovate *petals,* shorter than the calyx, and inserted in its divisions. *Stamens* 8, in a double series, those opposite the petals forming the inner series. *Filaments* very long, filiform, variously bent and widely spreading, their bases hid by the hairs of the calyx.

*Pistil: germen* 4-sided, inferior, sessile, forming a sort of pedicel for the flower. *Style* one, filiform, shorter than the stamens: *stigma* blunt. *Fruit* 4-winged, 1-celled, 1-seeded; wings spreading, purple. *Seed* 4-sided, pendulous.

This is a common plant, found all over the country, in straggling solitary bushes. From my own knowledge, I can state its habitat as extending from near Cape Comorin to the middle of the Northern Circars; how much further I know not. It is to be met with in flower and fruit the greater part of the year, but in most perfection during the cool season.

SUPPL. TAB. XXII. *Fig.* 1, Bud with its bractea, and *Fig.* 2, Front view of a flower:—*magnified. Fig.* 3, Section of a capsule:—*natural size.*

## XXIII, XXIV.

## VALLISNERIA SPIRALIS.

DIŒCIA DIANDRIA. Nat. Ord. HYDROCHARIDEÆ.

GEN. CHAR. *Flores dioici.—Masc. Spadix* conicus undique tectus flosculis; *spatha* inclusus. *Perianthium* 3-partitum. *Stam.* 2.—*Fœm. Spatha* monophylla, uniflora. *Perianthium* 3-6-partitum. *Stigmata* 3, bifida, extus quandoque appendiculata. *Bacca* unilocularis, cylindracea, polysperma. *Semina* parietalia. *Br.*

Vallisneria *spiralis;* scapo fœmineo spirali, foliis natantibus linearibus obtusis apice serrulatis. *Br.* (SUPPL. TAB. XXIII, XXIV.)

V. spiralis. *Linn. Sp. Pl. p.* 1441. *Willd. Sp. Pl. v.* 4. *p.* 650. *Br. Prodr. Fl. Nov. Holl. v.* 1. *p.* 345. *Spreng. Syst. Veget. v.* 3. *p.* 900.

V. spiraloides. *Roxb. Hort. Beng. p.* 71.

Vallisnerioides palustre, &c. *Mich. Nov. Gen. p.* 3. *t.* 10.

Ambul. *Tamul.*

*Leaves* radical, linear, obtuse, serrulate on the margin, about 3-nerved, varying in length according to the depth of water in which the plant grows, from 3-4 inches to more than a foot.

MALE: *Scapes* axillary, one or two inches long, cylindrical.

*Spatha* ovate, compressed, 2-leaved; the leaves united at their margins, and bursting at the apex. *Spadix* somewhat shorter than the spatha, conical, covered on all sides with innumerable shortly pedicelled, very small *flowers*. *Calyx* petaloid, 4-parted; *segments* somewhat unequal, obtuse, reflexed, thus forming a little float to keep the two short diverging *stamens* above water after the flowers are separated from the parent plant. *Stigmas* obtuse; *pollen* consisting of small transparent globules.

FEMALE: *Scape* spiral, capillary, of considerable length. *Spatha* tubular, 2-cleft at the apex, nearly as long as the spadix. *Calyx* 3-cleft; divisions short, obtuse, triangular. *Corolla* none. *Stamens* 3, sterile, inserted on the spadix, alternate with the segments of the calyx, very small. *Style* none. *Stigmas* 3, spreading, petal-like, hairy on their upper surface, and 3-cleft. *Capsule* (a *berry*, Br.,) cylindrical, 2-4 inches in length, including many parietal seeds.

In small water-tanks throughout India: to be found, perhaps, all the year, but principally during the rainy and cool season. It is marked as annual by Roxburgh; but this is perhaps an error. It extends itself rapidly by runners from the roots.

[Dr. Wight is, no doubt, correct in referring this to the *V. spiraloides* of Roxburgh; but on comparing the plant with the *V. spiralis* of Europe, it appears to be identical with it, and to have a very extended range, being found also in New Holland and in North America.—*H.*]

SUPPL. TAB. XXIII. Male plant. *Fig.* 1, Extremity of a leaf. *Fig.* 2, Flower-bud, taken from the spatha. *Fig.* 3, Flower:—*magnified.*

SUPPL. TAB. XXIV. Female plant. *Fig.* 1, Upper portion of a flower, with part of the spatha. *Fig.* 2, Section of the germen, showing the arrangement of the ovules:—*magnified.*

## XXV.

## PLADERA VIRGATA.

TETRANDRIA MONOGYNIA. Nat. Ord. GENTIANEÆ.

*Cal.* elongatus, 4-dentatus. *Cor.* infundibuliformis, limbo irregulari. *Stamen* unicum reliquis minus. *Stigma* bilobum. *Capsula* supera, 1-locularis, 2-valvis. *Semina* numerosa.

Pladera *virgata;* annua erecta tetragona, ramis oppositis alternisque, foliis inferioribus lanceolato-spathulatis 3-nerviis reliquis cordatis acutis, floribus terminalibus paniculatis. (SUPPL. TAB. XXV.)

P. virgata. *Roxb. Fl. Ind. v.* 1. *p.* 417. *Spreng. Syst. Veget. v.* 1. *p.* 437. *Cham. et Schlecht. in Linnæa, v.* 1. *p.* 198.
Exacum diffusum. *Wild. Sp. Pl. v.* 1. *p.* 637.
Gentiana diffusa. *Vahl, Symb.* 3. *p.* 47.
Canscora diffusa. *Br. Prodr. v.* 1. *p.* 451.
Centhera. *Tamul.*

Annual. *Stems* erect, ramous, 4-sided, angles sharp; *branches* axillary, at the base opposite, slender, ascending, dividing into alternate branchlets, in this resembling the upper part of the main stem, each branch of which repeatedly divides into two, until they finally terminate in three or five flowers. *Leaves* opposite, below spathulato-lanceolate, rather obtuse, above very broad, cordato-ovate, or nearly orbicular, sessile, somewhat amplexicaul, glabrous, thin, entire, very sharp-pointed. *Flowers* pale lilac-coloured, terminal. *Calyx* tubular, 4-cleft, segments acute, 3-nerved. *Corolla* funnel-shaped; *tube* the length of the calyx; *limb* 3-cleft, segments nearly equal, obtuse, spreading, one of them a little larger, with a deep cleft or plait in the middle, for the reception of the larger *stamen*. *Stamens* 4; *filaments* attached near the top of the tube, three of them short, bearing yellow *anthers*, the fourth much larger, with a deep orange-coloured *anther*, which becomes erect when about to shed its pollen, having been previously lodged in the groove of the corolla. *Pistil: germen* cylindrical, about half the length of the tube of the corolla; *style* filiform; *stigma* 2-cleft, its *segments* revolute, flattened, downy all over. *Capsule* cylindrical, within the withered corolla, 1-celled, 2-valved. If wounded before it is quite ripe, a quantity of milky juice exudes. *Seeds* very numerous, attached to the margins of the valves.

A native of wet soil; found near tanks, and on the banks of water-courses. The specimen figured was gathered near Negapatam in February.

Suppl. Tab. XXV. *Fig.* 1, Flower. *Fig.* 2, Flower laid open to show the pistil:—*magnified.*

## XXVI.

## PTEROSPERMUM SUBERIFOLIUM.

Monadelphia Polyandria. Nat. Ord. Byttneriaceæ.

*Cal.* 5-partitus, basi subtubulosus, nudus involucratusve. *Pet.* 5. *Stam.* 20, quorum 5 sterilia. *Stylus* cylindraceus. *Stigma* crassiusculum. *Capsula* lignosa, 5-loc., 5-valvis. *Semina* in alam producta, albumine parco aut nullo. *DC.*

Pterospermum *suberifolium;* foliis obovato-cuneatis apice irregulariter subtrilobis lobo medio acuminato subtus canescentibus, pedunculis axillaribus 1—3-floris, petalis lanceolatis, involucro nullo. (Suppl. Tab. XXVI.)

P. suberifolium. *Wild. Sp. Pl. v.* 3. *p.* 728. (*non Sims in Bot. Mag. t.* 1526. *nec Roxb. MSS. Cat.*) *De Cand. Prodr. v.* 1. *p.* 500. *Wall. Cat. Mus. E. I. C. n.* 1166.

P. canescens. *Roxb. MSS. Cat. cum Ic.*

Pentapetes suberifolia. *Linn. Sp. Pl. p.* 959. *Cav. Diss.* 3. *p.* 130. *t.* 43. *f.* 2.

Pterospermadendrum suberis &c. "*Ammann Act. Petrop.* 8. *p.* 215. *t.* 14."

A considerable *tree,* with rough *bark* and ramous slightly spreading heads. *Branches* round, dark brown, the young shoots at first covered with white powdery down, afterwards becoming of a rusty brown colour. *Leaves* alternate, on short rust-coloured *petioles,* coriaceous, strongly nerved, smooth, bright green above, white beneath, somewhat unequal at the base, and unequally 3-lobed at the apex; the middle lobe larger, acuminate. *Peduncles* axillary, or sometimes from a little above the axil, short, rust-coloured, from 1 to 5-flowered. *Flowers* white. *Calyx* deeply 5-cleft, tubular at the base; segments linear, acute, externally of a rusty brown, green within, 5-angled before expansion. *Petals* ovato-lanceolate, obtuse, white, shorter than the calyx. *Stamens* 20: *filaments* united at the base; the five *sterile* ones larger than the rest, hairy. *Anthers* erect, subulate. *Pistil: germen* superior, shortly pedicelled. *Style* the length of the stamens. *Stigma* thickened, villous. *Capsule* pedicelled, egg-shaped, covered with white powdery down, 5-valved, 5-celled: *partitions* from the middle of the valves. *Cells* 4-seeded, two to each partition. *Seeds* compressed, terminating in a long obtuse wing.

This tree is, I believe, rather rare: those individuals from which the preceding description was made, are, I believe, the only ones I have met with in their native habitat. They grow in sandy soil, about five miles from the sea-coast. The trunk is short, about two feet in circumference; the branches ascending, but pendulous towards their extremities. When I first saw them in October, they were loaded with fruit, but not a single flower could be found. The drawing was taken in May, and the fruit attached to the specimen is the production of the preceding year. It is used as timber by the carpenters, but I am ignorant of the quality of the wood.

[To Ammann's figure I have not an opportunity of referring; but that of Cavanilles entirely accords with our plant. Dr. Roxburgh has fallen into an error in calling this plant *Pterospermum canescens*, and in taking for the true *suberifolium* a very different species; the same, indeed, as is figured, and under the same name, in *Bot. Mag. t.* 1526, having leaves and flowers twice or thrice the size of our plant, and a 3-leaved involucre surrounding the calyx.—*H.*]

SUPPL. TAB. XXVI. *Fig.* 1, Stamens and pistil. *Fig.* 2, Seed:—*natural size.*

## XXVII.

## UTRICULARIA STELLARIS.

DIANDRIA MONOGYNIA. Nat. Ord. LENTIBULARIÆ.

*Cal.* diphyllus, labiis æqualibus indivisis. *Corolla* personata labio inferiore basi calcarata. *Stamina* 2, filamentis apice intus antheriferis. *Stigma* bilabiatum.

Utricularia *stellaris;* foliis radicalibus compositis laciniis setaceis utriculiferis, scapi utriculis verticillatis barbatis, calcare obtuso labio breviore. (Suppl. Tab. XXVII.)

U. stellaris. *Linn. Suppl. p.* 86. *Vahl, Enum. v.* 1. *p.* 197. *Willd. Sp. Pl. v.* 1. *p.* 113. (*excl. syn. U. inflexæ Forsk.*) *Roxb. Corom. v.* 2. *t.* 180. *Fl. Ind. v.* 1. *p.* 143. *Roem. et Schult. v.* 1. *p.* 194. *Spreng. Syst. Veget. v.* 1. *p.* 62.

Radical *shoots,* between three and four feet long, ramous, subimmersed. *Leaves* in whorls of four or five, cut into numerous forked filiform segments, appearing hairy under the lens, each bearing close to the fork a firm, cartilaginous, transparent, obovate *bladder.* The *scape* springs from the axil of a branch, and rises to the surface of the water, in which situation it is retained by six or eight ovate, oblong, sessile, cellular bearded bladders, attached to about its middle. These have been called *bracteæ,* but, in my opinion, erroneously, as the flowers are furnished, besides, with *scales* or *bracteæ,* at the base of each pedicel, as in the other species of this genus. They ought, therefore, rather to be considered supports (*fulcra*) or *floats,* than bracteas. *Pedicel* compressed, at first erect, afterwards drooping. *Calyx* of two ovate, acute leaves. *Corolla* ringent. *Spur* blunt, not much shorter than the under lip, bent forwards in the hollow of one of the calyx-leaves. *Stamens* 2, shorter than the style; *anthers* incurved, approximating. *Style* erect. *Stigma* peltate, hairy, the anterior edge hooked over, and embracing the anthers. *Capsule* globular, 1-celled. *Seeds* numerous, attached on all sides by a large globular *receptacle.*

This pretty little plant is found floating near the surface of tanks and standing water, in most parts of India; above which, during the cool and rainy seasons, it elevates the small clusters of yellow flowers which mark its presence. This species differs greatly in the form of the stigma from the other individuals of the genus, two of which now before me have a funnel-shaped stigma, with a portion of the edge dilated, forming a little lip or tongue, which laps over the anthers, apparently to catch the pollen.

Suppl. Tab. XXVII. *Fig.* 1, Flower. *Fig.* 2, Section of young fruit:—*magnified.*

## XXVIII.

## BERGIA AMMANNIODIES. *Var.* TRIANDRA.

DECANDRIA? MONOGYNIA. Nat. Ord. ELATINEÆ.

GEN. CHAR. *Cal.* 5-sepalus; petalis cum sepalis alternantibus. *Stam.* 10, quorum 5 cum petalis alternantia, 5 petalis opposita (in *B. pentandra* et in *B. ammannioidi* abortu nulla.) *Ovarium* ovoideum, 5-loculare, loculis multiovulatis, 5 stigmatibus stellatim dispositis coronatum. *Carpella* in capsulam ovoideam verticillata, unilocularia; valvis marginibus introflexis; *placenta* centrali 5-gona, lobis in loculis prominulis. *Semina* numerosa, lobis placentæ centrali ope funiculi brevissimi affixa, oblonga vix arcuata; tegumento crustaceo striatulo punctis elevatis micantibus consperso. *Camb.*

Bergia *ammannioides;* caulibus erectis ramosis, foliis obovato-ellipticis acutis in petiolum decurrentibus serratis pubescenti-asperis (vel glabris), floribus 3-5-andris 3-5-gynis. (SUPPL. TAB. XXVIII.)

B. ammannioides. *Roth, Pl. Ind. Or. p.* 219. *Roxb. Cat. Hort. Bot. Calc. cum Ic. De Cand. Prodr. v.* 1. *p.* 390. *Spreng. Syst. Veget. v.* 2. *p.* 423.

B. pentandra. *Cambass. Fl. Seneg. p.* 42. *t.* 12.

Lechea umbellata. *Willd. Sp. Pl. v.* 1. *p.* 495?

β. floribus 3-andris. (SUPPL. TAB. XXVIII.)

*Root* filiform, descending, white. *Stem* erect, rounded, ramous, everywhere rough from numerous capitate hairs. *Leaves* opposite, subspathulate, lanceolate, sessile, acutely serrated, veined, the veins thinly scattered with capitate hairs. *Stipules* 2 to each leaf, membranous, ciliate on the margin. *Flowers* axillary; *pedicels* whorled, from 12 to 20 in a whorl. *Calyx* deeply 3-parted; *segments* triangular, acute, coloured on the margin. *Corolla: petals* 3, pale reddish, or pure white, about the size of the calyx, and alternate with its segments, between which they are often found projecting when the calyx is closed. *Stamens* 3, opposed to the calyx, and shorter than it. *Anthers* large, 2-celled. *Pistil: germen* superior, 3, 4, 5,

or even 6-celled, each cell furnished with its own *style* and *stigma. Styles* short, approximated. *Stigma* obtuse, red. *Capsule* purple, cells equalling the number of stigmas; partitions formed of the inflexed margins of the valves. *Seeds* many in each cell, ovato-oblong.

The figure, No. 2, represents an individual differing from the above in being quite smooth, but in all other respects the same.

These plants are frequent in moist sandy soil, springing up during the rains, and continuing to the end of the cool season. The drawing was made about the beginning of February.

It appears to me that the genus to which this plant ought to be referred, is still undetermined. I think, however, that *Elatine* is the one that approaches most nearly in its characters to those above given. What Willdenow's *Lechea verticillata* is, it is not easy to conjecture. The "*caulis repens*" is altogether at variance with this plant, though in other respects they correspond so much, that Roxburgh gives that species as a synonym for his *Bergia ammannioides*, which I have no doubt is this very plant. I think it is also Roth's *B. ammannioides*, as it agrees well with his character of the species, as quoted by De Candolle and Sprengel, though differing in the number of stamens assigned to it, and, I presume, of the other parts of the flower, as these all correspond. This may be a variation from the usual form, in the same manner as the styles vary in different flowers, from 3 to 5, even on the same plant. Upon the whole, I think we have reason for believing this plant the *Bergia ammannioides* of Roth; but the question still remains to be determined, whether or not it ought to be referred to the genus *Elatine*.

[It does indeed appear, that the number of parts in the flowers of the Genus *Bergia*, and especially in the present species, is liable to much variation; yet Cambassedes, in his "*Memoire sur les Elatinées*," ("*Mem. du Mus. d'Hist. Nat.*" *v.* 18. *p.* 230,) says of it, "Genus vix ab *Elatine* diversum, nisi numero partium floris quinario." Hence, the justness of Dr. Wight's remarks will be apparent; and the present individual, at least, might, without any violence to nature, be united to *Elatine.—H.*]

Suppl. Tab. XXVIII. *Fig* 1, 2, Flowers. *Fig.* 3, Section of a capsule. *Fig.* 4, Portion of the stem, with glandular hairs:—*magnified.*

## XXIX.

## MICROCARPÆA COCHLEARIFOLIA.

Diandria Monogynia. Nat. Ord. Scrophularinæ.

Microcarpæa *cochlearifolia;* caulibus prostratis subsarmentosis, foliis oppositis subrotundo-spathulatis carnosis, floribus axillaribus sessilibus geminatis. (Suppl. Tab. XXIX.)

M. cochlearifolia. *Sm. in Rees' Cycl.*

Peplidium humifusum. *Delile. Spreng. Syst. Veget. v.* 1. *p.* 43.

Pæderota cochlearifolia. *Koen. et Rottl. MSS. in Herb. nostr.*

Hedyotis maritima. *Linn. Suppl. p.* 119. *Willd. Sp. Pl. v.* 1. *p.* 566.

Oldenlandia maritima. *Roth, Pl. Ind. Or. p.* 97. *Spreng. Syst. Veget. v.* 1. *p.* 446.

Amampacharisy. *Tamul.*

*Stems* filiform, diffuse, prostrate, somewhat sarmentose, jointed, rooting at the joints. *Leaves* opposite, shortly petioled, varying in different plants from spathulate to orbicular, entire, glabrous, fleshy. *Flowers* axillary, sessile, in pairs, small, white. *Calyx* tubular, persistent, slightly 5-cleft; *segments* obtuse; the *tube* contracted by five plaits, which gradually disappear as the enclosed capsule enlarges. *Corolla* 5-lobed; one of the lobes a little larger than the rest. *Stamens* 2, within the corolla: *filaments* attached to the middle of the tube, thick, short, angularly incurved. *Anthers* approximated, roundish, situated on, or rather in, the thickened apex of the filament. *Pistil: germen* superior. *Style* the length of the *stamens. Stigma* red, compressed, hooked over the *anthers. Capsule* about the size of a *coriander seed*, 2-celled, fragile. *Seeds* numerous, ovate, attached to a large central receptacle.

A humble plant, growing in patches on the borders of tanks and wet grounds; every branch of which within a few joints of the parent plant takes root, and produces a new set of plants and branches. There can be no doubt that this is the plant which Smith describes, (and of which he probably received specimens from both Koenig and Rottler,) as I have specimens in my herbarium labelled by Rottler, "*Pæderota cochlearifolia.*" It is in flower and fruit for several months during the rainy and cool season. I have only found it in the Tanjore country, and therefore suspect that it is a rare plant.

[Sir James E. Smith is probably correct in referring this to the *Microcarpæa* of Mr. Brown. The general structure of the flowers is the same, and in reference to Mr. Brown's remarks upon our plant, "that it differs principally from *Microcarpæa* in the valveless capsule," Sir James observes, that though the capsule "usually breaks at the sides," yet "traces of two distinct valves, each with a narrow partition from its centre, may easily be perceived, and these sometimes separate regularly at the top in the usual way, even to the base, as we find by examining various specimens."—*H.*]

Suppl. Tab. XXIX. *Fig.* 1, Flower. *Fig.* 2, The same laid open; the pistil, *Fig.* 3, being removed. *Fig.* 4, Section of the germen:—*magnified.*

## XXX.

## VILLARSIA MACROPHYLLA.

Pentandria Monogynia. Nat. Ord. Gentianeis *aff. Br.*

*Cal.* 5-(8-) partitus. *Cor.* subrotata, limbo patente, 5-(8-) partito, laciniis disco plano basi barbato v. squamulato, marginibus adscendentibus æstivatione inflexis. *Stamina* 5 (ad 8) laciniis alterna. *Stylus* 1. *Stigma* bi-(-5-) lobum, lobis dentatis. *Glandulæ* 5 hypogynæ, staminibus alternæ. *Capsula* polysperma, unilocularis, bivalvis (in aquaticis evalvis), valvularum axibus seminiferis. *Folia* simplicia.—Herbæ *natantes vel paludosæ.* Folia *alterna, raro opposita,* *petiolis basi dilatatis, semivaginantibus, integra vel dentata, subtus in plerisque punctata.* Flores *vel subumbellati axillares, nunc petiolum insidentes, vel paniculati terminales.* Corolla *sæpius flava, laciniarum marginibus fimbriatis vel integris. Br.*

Villarsia *indica;* foliis alte cordatis orbicularibus coriaceis repandis 3-nerviis, pedunculis umbellatis ex apice petiolorum, corollæ laciniis superne hirsutis, capsula evalvi, seminibus globosis echinatis. (Suppl. Tab. XXX.)

V. indica. *Vent. Choix des Pl. p.* 9. *Roem. et Schult. Syst. Veget. v.* 4. *p.* 179. *Spreng. Syst. Veget. v.* 1. *p.* 582.

Menyanthes indica. *Linn. Fl. Zeyl. p.* 72. *Sp. Pl. p.* 207. *Willd. Sp. Pl. v.* 1. *p.* 811. *Roxb. Fl. Ind. v.* 2. *p.* 31.

M. macrophylla. *Roth, Nov. Pl. Ind. Or. p.* 105.

Cumada. *Jones in Asiat. Res.* (*ed.* 8*vo.*) *v.* 4. *p.* 248.

Nedel-Ambel. *Hort. Mal. v.* 11. *p.* 55. *t.* 28.

Nymphæa ceramica. *Rumph. Amb. v.* 6. *p.* 173. *t.* 72. *f.* 3.

*Petioles* rounded, glabrous, in deep water very long, proliferous. *Leaves* orbicular, attached near their centre, and divided on one side down to the petiole, hence cordate, very slightly repand on the margin, thick, coriaceous, 3-ribbed, reticulated with veins, glabrous, light shining green above, brownish beneath. *Peduncles* aggregated on the apex of the petiole, filiform, 1-flowered, furnished at the base with a common membranous *bractea.* From the same point one or more new petioles spring, producing a fresh crop of flowers when the first is past. *Calyx* 6-8-parted; *segments* linear, acute, about half the length of the corolla. *Corolla* 5-6-8-cleft; *segments* lanceolate, spreading, very hairy within, pure white; *tube* yellow. *Stamens* alternate with the segments of the corolla, equal in number; *filaments* adhering to the throat, and continued to the bottom of the tube; the free part erect, subulate, incurved. There are no inferior alternate *glands. Anthers* erect, subulate, 2-celled, dark-coloured. *Pistil: germen* superior, globular, 1-celled. *Style* cylindrical, erect, terminating in from 3-5 white membranous umbilicated *stigmas. Pericarp; capsule* evalvular, 1-celled, with from 3-5 rows of *seeds* attached to its sides. The seminal *receptacles* correspond in number with the *stigmas.* *Seeds* rough, lenticular, attached by a short *pedicel.*

This most beautiful aquatic is in flower all the rainy and cool season, and certainly cannot be adequately represented on paper; at least the accompanying drawing falls very far short of the richness and beauty of the original.*

The present species differs from the usual character of the genus *Villarsia,* in having the whole disk of the limb of the corolla *bearded,* and in wanting the sterile filaments or glands; and certainly strengthens the arguments of those who object to the separation of this genus from *Menyanthes* on the characters hitherto assigned. If the floating evalvular species only were removed, there would, perhaps, be less room for objection, as the distinction would be supported, both by the difference of habit and the form of an important organ, the seed-vessel. But so long as the separation is made to rest on the presence or absence of sterile filaments or glands, and on the greater or less extent of beard on the segments of the corolla, this species must be divided from *Villarsia,* and united with *Menyanthes,* unless kept separate by the difference of the leaves. On these grounds I agree with Smith and others, in thinking that these genera are not sufficiently distinguished by the characters now assigned to them.

[Mr. Brown, indeed, has long ago observed, that *Menyanthes* differs from *Villarsia,* principally in the disk of the corolla being longitudinally bearded, in the margin being simple, (destitute of fringe, which, indeed, is the case with some acknowledged *Villarsiæ,*) and the ternate leaves. It may, therefore, not unreasonably be questioned, whether the latter should form a genus distinct from the former. In adopting it, we follow the now almost universal arrangement of authors.

The species requires a very careful revision; more than one having, we suspect, already been confounded with the *V. indica;*

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* The figure is faithful, but the artist has selected small leaves, and their thickness cannot well be represented. They are usually as large, and very similar to those of *Nuphar lutea,* or *N. advena.*—*Ed.*

yet this can scarcely be accomplished, on account of the extreme delicacy of the corolla, except from an examination of recent specimens. That the present is the *Menyanthes macrophylla* of *Roth, Pl. Ind. Or.*, as my friend Dr. Wight has considered it, there can, I think, be no question, and that it is the plant of Linnæus, provided the figure of Rheede and Rumphius are authorities for his species, I feel almost equally certain. So, also, I believe it to be the *Cumada** of Sir W. Jones, in *Asiat. Res.* (*8vo. ed.*) *v.* 4. *p.* 249, which he has so accurately described, as even to notice "*seeds* appearing rough, with small dots or points;" only he has quoted Tab. 29, (*M. cristata, Roxb.*) of Rheede, instead of Tab. 28, (*M. indica. L.*). Roxburgh's *M. indica, Fl. Ind. v.* 2. *p.* 31, I should have referred hither without hesitation, were it not that he terms the seeds "obovate," and does not notice the rough points with which they are covered. But his description is otherwise excellent, and the figure, among the drawings in the Museum of the E. India Company, of which a copy is now before me, is highly characteristic of our plant. From my valued friend, Mr. Parker, I have received specimens of a *Villarsia* from Guiana, and a drawing made by Mr. Ankers, the flowers of which bear the closest affinity with our present species; but the leaves are smaller and far less coriaceous; and if it be the same as a plant I have received from Dr. M'Fadyen, of Jamaica, the seeds are compressed, margined, and quite free from raised points. This may, perhaps, be the *V. Humboldtiana* of Kunth. Very different from all these is the *M. indica* of the *Bot. Magazine, t.* 658, with deep yellow flowers, but whose native country is not stated in that work. Dr. Wallich, however, says that it is found in Nepal, and that the young stalks are there employed in making Curries, (*see Fl. Ind. v.* 2. *p.* 31. *note.*) Sir James Smith (in *Rees' Cycl.*) describes the *M. indica* as having a yellow flower, and as being an inhabitant of the Cape of Good Hope.—*H.*]

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* The Indian name for this and other beautiful aquatic plants, meaning "*delight of the water.*"—Sir W. Jones.

Suppl. Tab. XXX. *Fig.* 1, Flower laid open. *Fig.* 2, Section of a capsule. *Fig.* 3, Seed:—more or less *magnified.*

## XXXI.

## BRYOPHYLLUM CALYCINUM.

Octandria Tetragynia. Nat. Ord. Crassulaceæ.

*Cal.* inflatus ante florescentiam vesicularis vix ad medium 4-fidus, lobis 4-valvatis. *Cor.* gamopetala hypogyna, tubo longo cylindraceo basi obtuse tetragono, lobis 4 ovato-triangularibus acutis. *Stam.* 8 tubi basi adnata. *Glandulæ* 4 oblongæ.

Suffrutex *carnosus erectus ramosus glaber.* Folia *opposita crassa petiolata;* alia *impari-pinnata, segmentis* 1-2-*jugis interdum nullis,* terminali *maximo interdum solitario, omnibus ovatis crenatis, crenis punctum opacum in plantulum facile evolutum gerentibus!* Cymæ *paniculatæ terminales.* Flores *flavo-rubentes.* Calyx *fere Silenis inflatæ.*

Bryophyllum calycinum. (Suppl. Tab. XXXI.)

B. calycinum. *Salisb. Parad. Lond. t.* 3. *Sims in Bot. Mag. t.* 1409. *De Cand. Prodr. v.* 3. *p.* 396.

Cotyledon pinnata. *Lam. Encycl. v.* 2. *p.* 141.

Calanchoe pinnata. *Pers. Syn. Pl. v.* 1. p. 446.

Verea pinnata. *Spreng. Syst. Veget. v.* 2. *p.* 260.

Cotyledon rhizophylla. *Roxb. MSS.*

C. calycina. *Roth, Nov. Pl. Ind. Or. p.* 217.

*Roots* fibrous, spreading, stoloniferous; the lower part of the *stem* speedily rooting, when by accident it is bent so as to approach the ground. *Stems* erect, rounded, glabrous, the old ones marked with the scars of fallen leaves. *Leaves* opposite, decussate, petioled, simple and ternate, or pinnate; *leaflets* 6-7, elliptic, slightly cordate, glabrous, fleshy, crenato-serrate, coloured on the margin, readily, when removed and suspended in the air, producing a new plant from each serrature. *Petioles* embracing the stem, glabrous, purple, speckled.

*Stipules* none, except a thick fleshy margin, which connects the petioles. *Cymes* panicled, large, leafy at the base; *branches* dichotomous, many-flowered. *Flowers* large, pendulous, greenish, mixed with purple. *Calyx* cylindrical, inflated, 4-cleft at the apex, lobes about $\frac{1}{4}$ the length of the tube, united by their edges into a 4-sided conical point. *Corolla* marcescent, tubular, 4-cleft, nearly twice the length of the calyx; *segments* acute; *tube* puckered round the germen, presenting, when the calyx is removed, the appearance of a head and neck; *limb* purple. *Stamens* 8, shorter than the corolla; *filaments* slender, subulate, attached to the neck-part of the corolla; *anthers* linear. *Pistils: germens* 4, substipitate, each furnished at the base with a compressed, nearly square gland. *Styles* the length of the stamens; *stigmas* simple. *Capsules* 4, 1-celled, 1-valved, many-seeded. *Seeds* borne on the inflexed margin of the valves. I have not seen ripe seeds.

I do not know whether this (which indeed has no Tamul name) is truly a native* of India; if not, it is now naturalized and found extensively distributed. It seems to prefer a moist, rather rich soil, and flowers during the cool season. The drawing was taken from a plant which flowered in my garden, and which I found apparently in a wild state about a year before, and transferred to its present place. There was no attention paid to it as to watering, or cultivation. It was brought from a moist shady situation, and planted in a dry, rather exposed one, and there produced the large handsome panicle of flowers which is represented on a greatly reduced scale. The separate flower is about the natural size—the whole plant was four feet high. Two other larger plants blossomed at the same time; and a gentleman tells me he has plants in his garden considerably larger than mine. In two of my plants the flowering-stem is producing fresh shoots. In the other I suspect it will die.

SUPPL. TAB. XXXI. *Fig.* 1, Flower. *Fig.* 2, The same laid open. *Fig.* 3, The pistil and glands. *Fig.* 4, Section of a young fruit. *Fig.* 5, Portion of a leaf throwing out new plants from the crenatures of the margin:—*natural size.*

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* It is said to be a native of the Moluccas.

## XXXII.

## BUTEA FRONDOSA.

DIADELPHIA DECANDRIA. Nat. Ord. LEGUMINOSÆ.

*Cal.* campanulatus, 5-dentatus, dentibus 2 sup. approximatis subconnexis. *Corollæ vexillum* lanceolatum patens, *carina* alis et vexillo æqualis incurva. *Stamina* diadelpha (9 et 1). *Legumen* stipitatum plano-compressum membranaceum indehiscens apice 1-spermum. *Semen* compressum magnum.

Arbores *Asiaticæ inermes.* Folia 3-*foliolata* 1-*juga cum impari, foliolis stipellatis amplis ovato-rotundis.* Racemi *multiflori,* floribus *ternis breviter pedicellatis sub calyce bibracteolatis.* Corollæ *intense coccineæ.* Calyces *pube sæpius nigricante velutini.*

Butea *frondosa;* ramulis pubescentibus, foliolis subrotundis, obtusis emarginatisve subtus subvelutinis, corolla calyce quadruplo longiore, dentibus calycinis subacutis. (SUPPL. TAB. XXXII.)

B. frondosa. *Roxb. Asiat. Res. v.* 3. *p.* 469. *Pl. Cor. t.* 21. *Willd. Sp. Pl. v.* 3. *p.* 917. *De Cand. Prodr. v.* 2. *p.* 415. *Spreng. Syst. Veget. v.* 3. *p.* 186.

Erythrina monosperma. *Lam. Dict. v.* 1. *p.* 391.

Plaso. *Rheede, Hort. Mal. v.* 6. *p.* 29. *p.* 16, 17.

Porasat Marum. *Tamul.*

A middle-sized *tree,* with rough cracked cinereous *bark: inner bark* thick, soft, white, exuding when first wounded a transparent gummy juice, which changes to red, and then concretes into clear shining ruby-like grains. *Branches* rounded, rough, their flower-bearing extremities pendulous from the weight of flowers. The young shoots, petioles, and under surface of the leaves are thickly covered with short whitish powdery-looking down. *Leaves* petioled, ternate, the terminal *leaflet* very broad, slightly emarginate at the apex, cuneate towards the base; the exterior side of the lateral pair dilated very much, and hence nearly twice the breadth of the inner, all beautifully marked with veiny reticulations. *Stipules,* two short, firm, pointed bodies at the base of the petiole; there are smaller ones of the same kind to each pedicel. *Racemes* terminal, drooping. *Rachis, pedicels* and *calyx* clothed with soft, brownish pubescence. *Flowers* large, bright scarlet, marked with darker lines. *Pedicels* ternate, rounded, about an inch in length, jointed at the apex, and furnished at both ends with small pointed deciduous bracteas. *Calyx* campanulate, swollen on the upper surface, 2-lipped; upper *lip* entire, or only slightly emarginate; under one 3-toothed, teeth pointed. *Corolla; vexillum* silky above, broad, lanceolate, reflexed; *claw* arched within the calyx, hence the swelling there. *Wings* lanceolate, spreading, below terminating in a thick fleshy ear, one-half of a deeper red than the other. *Keel* arched below, and cleft nearly half its length, marked on each side, near the base, with a deep depression for the reception of a plait of the wing. *Stamens* diadelphous, 9–1, the separate one adhering so firmly to the base of the *vexillum,* that it comes off with it in removing that petal; *anthers* oblong-linear. *Pistil: germen* pedicelled, oblong, linear-lanceolate, compressed, downy. *Ovules* 6, the two last larger. *Style* filiform, compressed, the length of the stamens, hooked at the point. *Stigma* small. *Pericarp: legume* stipitate, compressed, pendulous, 5–6 inches long, downy, tapering somewhat towards the base, but varying much in this respect, 1-seeded at the apex. *Seed* compressed.

[This splendid tree is a native, according to Dr. Roxburgh, of the low lands upon the coast, but is far more abundant among the mountains, casting its leaves in the cold season, which appear again with the flowers in the months of March and April. The seed ripens in June and July. According to the same author, the Lac insects are frequently found on the small branches and petioles of this tree. From natural fissures, as well as from wounds made in the bark during the hot season, a beautiful red juice exudes, which hardens into a ruby-coloured astringent gum, which Dr. Roxburgh suspects may be found useful in medicine; and the flowers yield a beautiful, but apparently not very permanent, bright yellow dye.—*H.*]

SUPPL. TAB. XXXII. *Fig.* 1, Legume:—*natural size.*

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## ADDITIONS AND CORRECTIONS
## TO THE
## ENUMERATIO FILICUM, PART I. LYCOPODINEÆ.

*Given at Page* 360 *of Vol. II. of this Work.*

BY R. K. GREVILLE, LL. D., & WM. J. HOOKER.

### LYCOPODIUM.

1. L. *Selago.* HAB. Peru. *Ruiz and Pavon, in Herb. Lambert.* Van Dieman's Land. *R. W. Lawrence, Esq.*

4. After L. *vernicosum,*

L. brevifolium. *Hook. et Grev.*

Caule erecto dichotomo robusto, foliis late ovatis nitidis arcte reflexis margine subdenticulatis, capsulis axillaribus.

HAB. Peru. *Ruiz and Pavon, in Herb. Lambert.*—The mode of growth is similar to that of *L. Selago* and its allies, but it is more robust, and at least a foot in height. The short reflexed leaves give it a most striking appearance.

6. After *L. crassum,*

L. axillare. *Roxb. in Beats. St. Helena, p.* 312.

HAB. St. Helena. *Roxburgh.*—The stems are for the most part simple, and the whole plant nearly related to *L. crassum.*

9. L. *rigidum.* HAB. Chimborazo. *Ruiz and Pavon, in Herb. Lambert.*

10. L. *setaceum.* Having carefully examined Mr. Don's original specimens, we are enabled to refer this plant to *L. pulcherrimum* of Wallich.

19. L. *acerosum.* According to authentic specimens in Sir James Smith's E. Herbarium, communicated by Thouin to the younger Linnæus, from the Isle of Bourbon, this is the true *L. verticillatum* of Linn. fil. and Swartz: but not of Willdenow and other writers.

24. L. *verticillatum.* Having ascertained that this is not the plant so named by the younger Linnæus, we wish it to bear the appellation of *L. protensum,* Hook. and Grev.

29. L. *struthioloides.* We have examined Hænke's specimen, named by Presl himself, in the Lambertian Herbarium; and find it to be in no respect different from *L. laxum* of that author, which also exists in the same collection.

41. L. *Flagellaria.* This plant must likewise be referred to the *L. laxum* of Presl, with which it agrees in every essential particular.

72. L. *clavatum.* The remarkable variety discovered in the Rocky Mountains by Mr. Drummond, and named by us *monostachyon,* was published by Dickson in his *Hortus Siccus Britannicus, fasc.* 7. *no.* 18., but there is no station attached to the specimens in Sir James E. Smith's Herbarium.

87. L. *Jussiæi.* In the Lambertian Herbarium are specimens of *L. Jussiæi,* named by Bonpland; and others of *L. Hænkei,* named by Presl: these we have compared, but without detecting any distinctive characters. *L. Hænkei* may, therefore, be regarded as a synonym of *L. Jussiæi.*

92. L. *decurrens.* This plant we have determined to be the *L. scariosum* of Forster, (*Florulæ Insularum Australium Prodromus,* 1786, *p.* 87,) by means of his own specimens in the Lambertian Herbarium. That name is therefore to be preferred.

94. L. *involvens.* Authentic specimens from Thunberg, in the Banksian Herbarium, enable us to refer our *L. pulvinatum* to this species.

95. L. *circinale.* The synonym of *Don, Prodr. Fl. Nepal.* belongs to *L. caulescens,* as we have ascertained by an examination of Mr. Don's own specimens.

After L. *circinale,*

L. lepidophyllum. *Hook. et Grev.*

Densissime cæspitosum, caule bi-tripinnato ubique folioso, foliis arctissime imbricatis coriaceo-rigidis obliquis late ovatis obtusis margine scariosis subtus pallidis rufescentibus, stipulis folio simillimis.

Hab. Near San Blas, Mexico. *Capt. Henry Dundas, R.N.* Peru. *A. Caldcleugh, Esq.*—Closely as this remarkable species resembles *L. involvens* in its appearance and mode of growth, it is well distinguished by its broader and obtuse leaves and stipules, which are, moreover, furnished with a thin scariose border. The stems are about six inches in length, and, including the branches, somewhat more than an inch in breadth. Spikes 2-3 lines long, acutely quadrangular.

104. L. *pennatum.* We find, upon inspecting Mr. Don's original specimens, that this species should be transferred to the group we have called *Platystachya.*

108. L. *anceps.* Hænke's own specimen, named by Presl, in the Lambertian Herbarium, does not differ from *L. flabellatum,* L.

133. After *L. pumilio,*

L. radiatum. *Aubl. Pl. de la Guiane, p.* 967.

Hab. Guiana. *Aublet.*

143. L. *stoloniferum.* We find, upon examining authentic specimens of the *L. stoloniferum* of Swartz, in the Banksian Herbarium, communicated by himself from Hispaniola, that we have committed an error in regard to the present plant. The species we named *L. Pæppigianum* is the true plant of Swartz, and was indeed transmitted to us as such by our friend Professor Kunze. The specific appellations of the two plants will, therefore, have to be transposed, and the synonyms of our *L. stoloniferum* referred to what we have erroneously called *L. Pæppigianum.* The stations belonging to the

true *L. stoloniferum*, are, therefore, Jamaica and Hispaniola. *Swartz.* Cuba. *Dr. Pœppig.*

156. L. *integerrimum.* This name, given by us to what we supposed a new Indian species, must give place to that of *ornithopodioides;* since we have cleared up the difficulties in which the latter plant was involved. In Hermann's Herbarium, deposited in the Banksian Collection, are the specimens which are the authority for the description in the *Flora Zeylanica;* and also another specimen, so named by König, who likewise refers to Hermann's Herbarium. Both are the same as our *L. integerrimum.*

160. After *L. radicatum,*

L. prælongum. *Hook. et Grev.*

Caule decumbente bipinnatim ramoso ad basin folioso apice distanter et simpliciter pinnato longe attenuato radicante, ramis ramulisque brevibus, foliis ovato-oblongis rigidis obtusiusculis minute denticulatis basi superiore ciliatis, stipulis folio duplo minoribus oblique ovatis basi inæqualiter auriculatis denticulato-ciliatis subcuspidatis, spicis brevibus.

Hab. Presidency of Madras. *Dr. Wight.*—Plant from twelve to twenty inches in length; slender, alternately branched, in a very regular manner; the lower branches (except one or two at the base, which are three or four inches long) are about two inches in length, becoming gradually shorter and more simple as they approach the extremity, to which, however, they are continued. It is a very elegant species, of a lively green colour, and quite distinct from *L. radicatum,* to which it is allied.

180. After *L. anomalum,*

L. brachystachyum. *Hook. et Grev.*

Caule stolonifero decumbente apice suberecto tripinnatim ramoso folioso, foliis horizontaliter pectinatis saturate viridibus ovato-oblongis coriaceo-membranaceis paululum falcatis obtusis integerrimis basi superne dilatatis, stipulis oblique ovatis longe cuspidatis subdenticulatis, spicis perbrevibus.

Hab. Ceylon. *Macrae, in Herb. Bentham.* A large robust species, above a foot in length, throwing out numerous stout stolones, three or four inches long. Habit very much that of *L. atroviride*, but apparently more decumbent. Cauline leaves near two lines in length; those of the branches somewhat shorter and narrower. Spikes about three lines long.

181. After *L. tenerum*,

L. Macraei. *Hook. et Grev.*

Caule stolonifero suberecto superne bi-tripinnatim ramoso, ramis brevibus, foliis horizontalibus ovato-oblongis obtusis margine superiore basi valde dilatato ciliato, stipulis folio octuplo minoribus ovatis longe aristatis serratis, spicis elongatis, squamis ciliato-serratis.

Hab. Ceylon. *Macrae, in Herb. Bentham.*—Plant eight to ten inches long, or perhaps more, as the specimen in Mr. Bentham's Herbarium is not perfect. Leaves of the stem somewhat approximate, a line and a half long. The branches are about an inch in length, arranged alternately at intervals of half an inch: the ramuli are only two or three lines long. Spikes beautiful, an inch and a half long.

L. ornatum. *Hook. et Grev.*

Caule stolonifero suberecto? tripinnato, ramis elongatis plumosis, foliis oblongis horizontaliter pectinatis margine superiore denticulatis obtusis paululum falcatis, stipulis ovatis denticulatis mucronatis, spicis subuncialibus.

Hab. Sumatra. *Miller, in Herb. Banks.* This very elegant plant resembles our *L. Wallichii* both in size and habit, but is at once to be distinguished by its unilateral fructification.

L. calostachyum. *Hook. et Grev.*

Caule stolonifero decumbente bi-tripinnatim ramoso, ramis elongatis, ramulis brevibus, foliis horizontaliter pectinatis læte viridibus ovato-oblongis membranaceis obtusis basi superiore valde dilatatis ciliatis, stipulis ovatis denticulatis longe et oblique cuspidatis, spicis brevibus, squamis denticulatis majoribus pulcherrime pectinatis.

Hab. Ceylon. *Macrae, in Herb. Bentham.* A remarkably beautiful species, the numerous elegantly pectinated spikes giving it a light and graceful character. The specimen from which our description was taken is not entire, but the whole plant is probably six or eight inches in length: the branches are three or four inches long—the ramuli about an inch—the ultimate ones supporting the spikes only a few lines in length. The spikes are from one-third to half an inch long. The stipules are minute, and furnished with a stramineous aristate point, nearly as long as themselves.

## OBSERVATIONS ON SOME BRITISH PLANTS, PARTICULARLY WITH REFERENCE TO THE ENGLISH FLORA OF SIR JAMES E. SMITH.—

By W. Wilson, Esq.

[*Continued from Page* 412 *of Volume II.*]

30. Paris *quadrifolia.*—Woods near Over, Cheshire, May 16, 1827.—*Leaves* sessile, as I think. *Styles* violet-coloured, as well as the depressed, 4-sided *germen. Flower-stalk* with 8 angles, and as many deep furrows.

31. Butomus *umbellatus.*—Anglesea, September, 1828.—The *fruit* a single *capsule,* apparently, with 6 folliculose valves, whose edges, though separating above, are closely united below. *Seeds* lining each side of the valves for some distance near the margin.

32. Andromeda *polifolia.*—Woolston Moss, May 26, 1827.—*Stamens* not attached to the corolla; for, in an advanced state, the corolla may be detached, leaving the dilated hairy filaments still adhering to the receptacle; yet it sometimes happens otherwise. Perhaps the filaments may have a *slight* connexion with the corolla, occasionally, as in *Vaccinium Vitis Idæa.*

33. Saxifraga *nivalis.*—Snowdon, 1826.—June 27, 1828.—*Flower-stalk* at the *outside* of the radical leaves. *Petals* with

two yellowish spots near the claw. *Calyx-segments* not reflexed. *Pollen* red. *Capsule* two-celled, in each cell are two contiguous linear receptacles, one on each side of the line of dehiscence.

34. Saxifraga *tridactylites.*—Anglesea, May 8, 1828.—If the *germen* be really inferior in this, and the similarly constituted species, how can the *calyx* be termed monophyllous? I would rather think it 5-leaved, even when the *germen* is superior.—*Seeds* not very evidently angular, but with a prominent line on one side, striated and somewhat dotted, not compressed, rather larger at the upper end. When growing on sunny limestone cliffs, this plant is altogether of a bright red colour, and is then very elegant.

35, 36. Saxifraga *muscoides* and *pygmæa.*—Not having seen specimens of either, I can only venture to suspect that these are but varieties of one species; certainly there is nothing in the characters or descriptions of *Eng. Fl.* to justify their separation. Moreover, I consider that there is nothing but the *superior calyx* which can permanently distinguish them from *S. cæspitosa.*

37. Saxifraga *cæspitosa.*—Twll dû, 1825.—Examined 17th January, 1829.—I approve of the description in *Eng. Fl.*, and at present am inclined to believe it a distinct species. In my specimens, the *radical leaves* are 3- or 5-cleft, some of them entire; those of the short lateral shoots entire or 3-cleft; the shoots are so very short as to be almost undiscoverable, and the *flowering-stems* were consequently almost contiguous. *Petals* very small, hardly twice as long as the segments of the calyx, 3-ribbed. It was very scarce, and I could find only two small roots, from which I obtained about 6 flowering specimens. A root of *Saxifrage*, brought from Snowdon in 1820, (by my brother,) which has hitherto been considered as *S. palmata*, I find, on examination, to answer very exactly to *S. cæspitosa β.* of *Eng. Fl.* and agreeing also with what is there said of the cultivated plant from Brandon mountain. The Snowdon plant has acquired by culture rather long procumbent *shoots*, the *leaves* of which are all 3-lobed, never 5-lobed, unless just below the flowering-stems; the *lobes*

obtuse, short, and often very broad, not spathulate, copiously fringed with jointed hairs of various lengths, the short ones often glandular. It is true that, in this case, the lobes of the leaves are not rounded at the extremity, as in the wild specimens from Twll dû; and though they are always much more obtuse than in the cultivated varieties of *S. hypnoides*, hereafter enumerated, they are sometimes terminated by a point; but it will be found that the point is not cartilaginous, as in *S. hypnoides*, but only a terminal jointed glandular hair, in every respect similar to those observable in the margin of the lobes. The ribs of the leaf will also be found rather different; the broad common base of the lobes having 5 ribs, instead of 3, uniting much lower down the foot-stalk than is common to *S. hypnoides;* thus the middle lobe is 3-ribbed at the base, and the lateral lobes 2-ribbed, and sometimes 3-ribbed; all of them furnished with lateral veins above. The *radical leaves* are usually 5-lobed. The *petals*, notwithstanding their size, are merely obovate, and 3-ribbed, never furnished with lateral veins, as in many of the wild and most of the cultivated states of *S. hypnoides.* The *germen* in this, as well as in the wild plant from Twll dû, is remarkable for its broad rounded base, which, with the very broad and obtuse segments of the calyx and leaves, fully establishes, as I think, the relationship between the cultivated Snowdon plant, and the wild one from Twll dû, and will keep both from all the varieties, wild or cultivated, of *S. hypnoides*, as essentially distinct, though assuredly very nearly connected. The *seeds* of the cultivated plant are rough, and, like those of *S. hypnoides*, in the Twll dû specimens, they seem wholly smooth; but as they are immature and, I think, abortive, I do not consider that circumstance important. Of the wild state of the Snowdon plant I know nothing, and I have never been able to find a *Saxifrage* at all resembling *S. cæspitosa* upon Snowdon, so that it must be rare. Of the authenticity of the plant now in cultivation, as having been really gathered upon Snowdon, I have not the least doubt.

[This very rare species of *Saxifrage* has now been detected on the high mountains of Aberdeenshire by Dr. Graham, as stated in *British Flora, ed.* 2, *p.* 195.—*H.*]

38. Saxifraga *hirta.*—I could never find a *Saxifrage* in Wales sufficiently hairy to justify this name, or in that respect at all approaching to *cæspitosa.* When it acquires rounded *petals,* and the ribs are furnished with lateral veins, it becomes *S. platypetala.* When the segments of the leaves are narrow and widely spreading, it then passes for *S. leptophylla.*

After a careful and minute examination of a great number of specimens from Wales, and of plants in a cultivated state, I have come to the conclusion that *Saxifraga hirta, platypetala, leptophylla,* and *hypnoides,* are varieties of one species; they are, moreover, *so intimately connected by intermediate states, that it is hardly practicable to define their limits, even as varieties.* The following arrangement is the best that I can think of:—

Saxifraga *hypnoides.*—Examined January, 1829.

SPECIFIC CHAR. *Radical leaves* 3- or 5-cleft; those of the procumbent shoots undivided, or 3-cleft; *all bristle-pointed,* and more or less fringed. *Segments* of the *calyx* ovate, pointed. *Petals* roundish, obovate, or oblong, 3-ribbed, with or without lateral veins.

*α. S. hypnoides.—Eng. Fl. v.* 2. *p.* 277.—*Leaves of the trailing shoots undivided,* sometimes with axillary buds. *Stem* bearing from three to seven, usually erect, sometimes drooping *flowers. Petals* elliptical, entire, 3-ribbed; sometimes as broad as those of *S. platypetala,* and like them furnished with lateral veins; sometimes very narrow, notched, or pointed. The procumbent shoots in this variety are sometimes very short, and sometimes destitute of axillary buds, which appear to be neither a constant character nor confined to this variety. A root exactly answering to *S. hypnoides* of *Eng. Fl.* from Dove Dale in Derbyshire, is not altered by culture, except that the axillary buds on the shoots are not so numerous as in wild specimens from the same place.

*β. S. platypetala* and *hirta.—Eng. Fl.—Leaves of the procumbent shoots either undivided or* 3-*cleft. Petals* usually broad, with or without lateral veins.

This is closely connected with the preceding and following varieties, and perhaps should not be kept separate from γ. *Flowers*, in some instances, drooping; generally erect. *Calyx-segments* sometimes narrow. *Petals* variable, as in the last.

γ. *S. platypetala* and *hirta.—Eng. Fl.—Leaves of the procumbent shoots mostly 3-cleft*, the lobes usually broad, the middle one 3-ribbed at the base. The common base of the lobes mostly very broad, and tapering downwards into the more or less elongated foot-stalk. *Flowering-stem* three or twelve inches high, the flowers, in some instances, few and crowded upon short branches near the top; sometimes there are seven or nine flowers; the branches axillary, and often placed at distant intervals along the stem. *Calyx-segments* variable in breadth and length. *Petals* variable, as in the foregoing; in some instances very long and narrow, with a notched extremity.

The procumbent shoots are frequently furnished with axillary buds. By cultivation, the *leaves* in autumn become very large and 5-lobed, the *lobes* spreading, and in some degree spathulate. A root exactly answering to *S. platypetala* of *Eng. Fl.* brought from Wales, was found not materially altered by culture while in a flowering state; but in the autumn following, the leaves of the shoots were almost universally 5-parted, and the lobes broadly spathulate.

δ. *S. leptophylla.—Eng. Fl. v. 2. p. 279.—Leaves of the procumbent shoots deeply 3-cleft;* lobes linear-lanceolate, and *widely spreading.*

In this, the *calyx-segments* vary much in breadth and length. *Petals* obovate or elliptical, 3-ribbed; seldom furnished with lateral veins. Intermediate states occur, in which the leaves of the stem have narrow, wide-spreading lobes, while those of the procumbent shoots are undivided, as in the var. α.

ε. Flowering-stem terminating the procumbent shoots.

*This can scarcely be termed a variety*, yet it is not readily altered by culture, though perhaps its habit is not strictly permanent. Except in having the flowering-stem at the ends of the shoots produced in the spring, there is nothing to distinguish it. A *root* from Snowdon was not altered in the garden at the time of flowering, in the following year; but as it was soon afterwards destroyed, I had not opportunity to make further observations. In the autumn following, the *leaves* were found very large, having from five to *nine* spreading segments, or doubly 3-parted. In the flowering state they corresponded with the variety δ. On the other hand, wild specimens from Twll-dû, with terminal flower-stalks, rather belong to the variety γ.

In some of the wild specimens from Wales, I observe the *anthers* to be minutely pointed; in other cases their lobes are spreading below. In a few instances the filaments are scarcely, if at all, dilated at the base. The *stigmas* appear to be of uniform structure, accidentally variable in size and direction; equally so on the same individual plant as in the different varieties. In one or two of the Snowdon specimens, I find the ribs of the leaves, especially of the foot-stalks, very strong and prominent. The *calyx-segments* are, in every instance, 3-ribbed. The *flowers* in a dried state are either quite white, or, in some varieties, yellowish or cream-coloured, indicating almost a specific difference, and the ribs on the petals are in some individuals much more conspicuous than usual. The *seeds*, so far as I have observed, are always rough, either ovate or roundish. *Embryo* nearly central, with 2 cotyledons.

39. Saxifraga *affinis*.—The character and description would hardly induce me to admit it as a species—if cultivation should be found not materially to affect it, I would not altogether refuse to receive it, but if the plant has been only partially examined, and the description made from one or two specimens only, I should have serious doubts concerning this plant.

40. Saxifraga *incurvifolia*.—If the *obtuse incurved* segments of the *leaves* should be found constant, I may consider it distinct from *S. hypnoides* and the varieties, but it would perhaps not be very easy to distinguish it from *S. cæspitosa*, with which the calyx-segments seem to correspond. The "upright shoots" may vary by culture or otherwise, as is the case with *S. cæspitosa*, and, as it appears, also with *S. elongella*.

41. Saxifraga *denudata.*—It is hardly necessary to observe that this is a very doubtful species. The reflexed points of the calyx-segments are very general in the varieties of *S. hypnoides,* and the lanceolate shape of the segments probably accidental.

42. Saxifraga *elongella.*—It is hardly possible for this to be any thing else but a variety of *S. hypnoides,* if the description be a faithful one.

43. Saxifraga *lætevirens.*—The recurved points of the segments of the *leaves* may possibly distinguish this as a species, but at present I think its claims very doubtful.

44. Saxifraga *pedatifida.*—The very long narrow segments of the *calyx,* if constantly as long as the capsule, may furnish a specific character: in other respects, I should think it might prove a state only of the var. *leptophylla,* the leaves of which by culture become doubly 3-parted.

45. Silene *acaulis.*—Twll-dû.—May 30, 1828.—*Leaves* connate at the base, *sessile.* The "cloven *scale*" at the base of the limb of the petal is formed of two prominences, hollow beneath.

46. Arenaria *verna.*—Scotland.—July 20, 1827.—The *filaments* certainly arise from a glandular *disk,* but at first sight only the alternate ones, between the *petals,* are glandular at their exterior base, where a single horizontal pore is observable. (In *Cherleria sedoides* there are two, one at each side.) In these specimens I do not perceive the leaves (previous to being dried,) to be 3-ribbed at the back, though in dried Welsh specimens it is evident enough. The *seeds* (in Welsh specimens,) are not sessile upon the receptacle, but some of the upper ones have stalks nearly three times their own length.

47. Arenaria *rubella.*—Mael Greadha.—July 23, 1827.—*Calyx* leaves 3-ribbed with membranous edges, slightly covered with viscid hairs. *Petals* entire, *shorter than the calyx. Filaments* from a glandular disk, those alternate with the petals bearing the glands at their exterior base, or seated upon them. *Anthers* white, though sometimes inclining to red. *Styles* three, four, or five. *Stigmas* linear, slightly recurved. *Flower-stalk* and upper part of the *stem* viscid, the former of a purplish colour. *Leaves* 3-ribbed, (the ribs parallel, prominent on

each side of the leaf,) bluntish, without points, those of the *stem* rather broader than the rest, all of them linear, flat; the upper part of the stem bearing ovato-lanceolate *bracteas*, which are membranous in the margin and fringed below. *Calyx* slightly spreading when in flower, almost as long as the flower-stalk. Several *stems* arise from the same root, often bearing two flowers. *Seeds* kidney-shaped, rough or granulated.

48. Cherleria *sedoides.*—Ben Lawers.—July 13, and August 16, 1827.—*Calyx* 1-leaved, deeply divided into 5 segments? *Stamens* from a glandular disk, those filaments alternate with the petals, having at their base two yellow *glands*, one on each side; the other filaments are placed between the glands, not at their backs—the *glands* project beyond the insertion of the adjoining filaments and have a pore at their extremities.

49. Cotyledon *Umbilicus.*—Anglesea.—July 4, 1828.—I find the *anther* 2-valved. *Filaments* inserted between the valves and extending to the centre; the two valves becoming reflexed and externally concave. In this state the *anther* is versatile, but previously not evidently so. *Nectaries* deep yellow, not red.

50. Sedum *dasyphyllum.*—Conway.—June 11, 1828.—*Nectaries* yellow, obovate and notched, or almost obcordate. *Pistils* sometimes 8, always equal to the number of petals, nectaries, and calyx-segments, and the *stamens* twice as many. Those *filaments* alternate with the petals are longer than the rest. *Calyx-segments* very fleshy, convex on both sides.

51. Sedum *anglicum.*—Anglesea.—July 8, 1828.—The *filaments* opposite to the petals are connected to the bases of the petals, and even those which are alternate with them are in some degree connected in like manner. I cannot perceive a red rib on the petals. *Nectary* dark red, as also the *anthers.*

52. Sedum *reflexum.*—Roofs at Aber.—July 11, 1828.—Segments of the *calyx* with concave backs. *Petals* keeled at the back, above twice the length of the calyx, channelled above. *Anthers* oblong, yellow. *Nectaries* yellow, very short and abrupt, their length less than the breadth, flattened. *Fila-*

*ments* awl-shaped, compressed below, and pubescent on the inner side near the base.

53. Sedum *Forsterianum.*—Little Ormeshead.—June, 1828. —Segments of the *calyx* very seldom elliptical and obtuse. I find them generally broadly ovate, bluntish, flat, or with the sides sometimes slightly reflexed, and like the flower-stalks, glaucous. *Petals* four times as long, lanceolate, bluntish, keeled. *Filaments* as long as the petals, subulate, somewhat flattened below. *Germens* lanceolate, tapering. *Stigmas* indistinct. *Nectaries* oblong, slightly notched, flattened, broader at the base than at the abrupt summit, one at the base of each germen, opposite the petals. *Stem-leaves* mostly erect, acute, fleshy, the upper ones rather flattened, and all of a dark purplish-green colour.—Perhaps the compact, hemispherical or round-topped *cyme,* is the best mark by which to distinguish it from *S. reflexum.*

54. Cerastium *vulgatum.*—May 15, 1827.—*Petals* cloven, but not very deeply so. Five *stamens* longer than the rest, alternate with the petals and glandular at the base.

55. Cerastium *semidecandrum.*—April 25, and May 15, 1827. —In some situations the plant is entirely procumbent; sometimes upright.—*Stems* constantly branched. *Calyx-leaves acute,* otherwise corresponding with *Eng. Fl. Petals* striated or furrowed. Each of the *filaments* seems to have a nectary at its base.—Hugh Davies appears to have been but ill acquainted with the plant, he having noticed the most common appearance as a singularity, under the name of *Cerastium humile.—v. Dav. Wel. Bot.*

56. Cerastium *alpinum.*—Craig Calleach.—July 13, 1827.— On comparing this with Welsh specimens of *C. latifolium,* I can find no essential difference in the parts of fructification. They differ in habit. *C. alpinum* has the *stem,* I think invariably, simple, erect, with fewer leaves than in *latifolium,* the upper pairs of leaves very distantly placed. The *anthers, pollen, filaments, stigmas, petals, calyx,* and *capsule,* are very similar in these two species.

57. Cerastium *latifolium.*—Snowdon.—August 7, 1828.— *Petals* with 5 or 7 strong, prominent ribs at the base, subdivided

once or twice, upwards; to their bases are attached five of the *stamens*, the other *stamens* are glandular at their exterior base. *Germen* on a very short stalk. *Stigma* decurrent along the inner side of the *style*. *Anthers* incumbent, versatile, roundish or oblong. The *capsule* is longer than the calyx, bent above. *Leaves* fringed, the upper surface nearly smooth; the lower surface clothed with upright hairs. *Pubescence* consisting of jointed hairs seldom tipped with glands, deflexed on the stem; widely spreading on the flower-stalk. *The stem branched and procumbent, often with axillary flower-stalks.* Grows in moist situations on the rocks, and by no means plentiful in Wales.

58. Spergula *saginoides*.—Craig Calleach.—July 27, and August 7, 1827.—The *filaments* alternate with the *petals* have a *nectary* at the exterior base as in *Cerastium*. In the half ripe fruit the stalk is drooping, or bent downwards. *Capsule* a little longer than the *calyx*, and, I believe, formed of "five distinct valves, very blunt and recurved at the extremity," though I have never observed them to separate to the very base, generally only half-way; yet the sutures are visible at the base, and it is not difficult to separate them completely. The *capsule*, though drooping while immature, at length erect. *Seeds* on stalks of twice their own length.

59. Spergula *subulata*.—Anglesea.—May 7, 1828.—I cannot distinguish it from *S. saginoides*. The *calyx-leaves* after impregnation of the flower, are somewhat keeled.

60. Lythrum *Salicaria*.—September, 1826.—The partition of the capsule has a cylindrical fleshy column, or *receptacle* in the middle, to which the seeds are attached at their narrow ends. *Seeds* obovate, convex externally, flat on the other side, bordered at the summit, and appearing as if notched.

(*To be continued.*)

# EXTRACT OF A LETTER, RELATIVE TO THE VEGETABLE PRODUCTIONS AROUND LAHOOGHAT IN KUMOAN. From A. K. Lindsay, Esq. M.D. of the Hon. the E. I. C. Service, to G. A. W. Arnott, Esq. of Arlary.

[*Dated Lahooghat, 23d January*, 1831.]

"I fear that you will find my written account of the botany of these regions as imperfect in its way as is the box of specimens which I have prepared for you. Yet I have an idea that a distinguished botanist like yourself may glean something, even from such a poor description as the following must be: without further preface, therefore, I shall commence, only I beg of you not to look for arrangement. As I cast an eye round the hills, a tree or a plant may be suggested to my mind, and down shall go what I have to say about it, without reference either to Linnæus or Jussieu.

"This station is situated in 29° 24′ N. lat. and 79° 57′ E. long. It is about 5700 feet above the sea, with moderately high ranges of hills on all sides, and is as of irregular surface as you would expect, considering that within ten hours' walk there runs the Kalee river, (which divides the British and Goorkalee territories,) the bed of which is more than 4000 feet below us; and towards the north flows the Ramesur river on its way to join the former; the bridge over it is about five hours' walk from hence, and not quite 1500 feet above the sea. The soil in this vicinity lies thinly upon mica slate and quartz: not far in any direction the soil is even worse, being wholly disintegrated granite, scattered over which are immense round masses of that rock. Beyond the Ramesur, the country is far more fertile, the hills being much less abrupt, and limestone being a prevailing rock. The temperature here (Lohooghat) is remarkably pleasant; great heats or excessive cold being equally unknown; the annual mean I have endeavoured to arrive at by several methods, and the truth seems to be somewhere between 57° and 60°. We have periodical rains, and the seasons arrange themselves into cold, hot, and rainy, as in the plains of India. Nothing can exceed the uniformity of temperature during the rains, the thermometer being steady for nearly four months, about 66° at sunrise, and 75° at 2½ P. M. At that season there is a complete change in the vegetable world, tropical plants taking the place of familiar-looking, almost Scotch weeds! During the cold season (the daily range being from 32° to about 56°) there are few flowers, and as the weather is generally dry, all kinds of vegetation are much burned up, *Dandelion*, *Thyme*, *Raspberry*, and the useful Paper *Daphne*, (*D. cannabina*,) being the only flowers that survive. The thermometer is sometimes 5° or 6° below freezing, but even at the coldest time of the year it is generally above that point. The extremes for 1829 were 26°·7 and 83°·3, for 1830, 27°·2 and 81°·6. The hot weather, which in these hills is often refreshed by thunder storms of hail and rain, is the season for a botanist, the variety is so great: the grandeur of the plants may be superior in the rains; but April and May, spent by a botanist (I often wish that I were one,) in traversing the 80 miles of straight line, from the plains of Rohilkund to the snow-line of the Himalaya, over many ranges with corresponding deep vallies, would appear to me to afford greater variety than the same distance in any part of the world. What Wallich has done, I know not, but till his time, this elysium for a botanist has scarcely been visited; at least I am not aware of more than a few straggling species described by Dr. Hamilton Buchanan, or Hardwicke. By the bye, I have often been much struck with the irregularity of the geography of plants, with reference to elevation. Exposure, and soil, but chiefly the former, seem to have considerable influence in the distribution; for instance, in the great valley of Ramesur, (which I have often to cross to visit an out-post at Petoragurh,) on the side looking to the north, the *Firs* (*Pinus longifolia*), leaving, above, *Oaks* and *Rhododendra*, accompany *Sal trees* (*Shorea robusta*) and a dwarf *Date*, down to the very river;—cross the bridge, and there are neither *Firs*, *Dates*, nor *Sal;* but *Citrus*, *Bassia*, *Bauhinia*, *Phyllanthus*, *Ficus* continue to the ridge, immediately over which *Firs*, &c. commence again.

"The hills hereabouts are universally terraced where there is soil, the terraces rising over one another like steps of a stair, and of more or less breadth, according to the angle which the hill-side makes with the horizon; the agriculture is, concisely, as follows:—*Wheat* and *Barley* are sown in November and reaped in May and June; *Rice*, (both on dry and irrigated fields,) *Buckwheat*, and several small grains, as *Cynosurus* and such grasses, *Turmeric*, *Pulse* of various sorts, *Sesamum*, and *Maize*, are sown in June, and gathered in September and October; also, as vegetables, *Cucumbers* of various sorts, *Potatoe*, *Capsicum*, *Tobacco*, *Amaranthus*, and *Arum*. The cultivation, of course, varies according to the elevation, some high villages grow quantities of fine *Hemp*, for making bags, in which borax, grain, and goods of all kinds are carried. *Plantains*, *Sugar-cane*, and *Ginger*, do not grow near this place, but are abundant in the lower warm districts, where, too, *Lemons* and *Mangoes* are found growing wild, and *Oranges*, if planted. Manure is universally used in the in-lying fields (those near villages); by the liberal use of it at each sowing, two crops are obtained annually; straw, leaves, grass, ferns, &c. are used to litter the cows and buffaloes to produce the dung; and when the turn comes for the out-lying fields, (I thus term patches of good soil cleared and cultivated now and then in the jungles,) the cattle are stationed near them for a time till a sufficiency of dung be collected; these fallow fields are turned over with a pick-axe-shaped hoe, some months before ploughing-time; and when the turfs are dry they are collected into little heaps and burned. The ashes are spread before ploughing.

"The woods around us are composed, first, of that most magnificent *tree*, *Rhododendron arboreum.* The splendour of the forests above, in March and April, owing to this beautiful tree, is quite indescribable. *Oak* of three species occurs, (or perhaps only varieties of *Q. Ilex;*) large patches are covered by groves of *Deodar*, (*Pinus Deodora*,) and where these are thickly spread, they admit of no others, it is a grand and most useful tree; the *Cher* (*Pinus longifolia*,) is more generally scattered, and grows at a much lower level than the *Deodar*, though they are often seen mixed: the other smaller trees chiefly confined to ravines and glens, are *Holly*, a *Pear*, (with a small round fruit,) *Peach*, (with tasteless white flesh,) *Cherry*, a fine creeping white *Rose*, which often covers and hides a large tree, *Horse-Chestnut*, *Eleagnus*, *Kaephul*, (*Coriaria?*) *Viburnum*, and *Lonicera*, also *Andromeda*. Around the villages again, is always a fine show of *Walnut*, *Pomegranate*, *Apricot*, *Mulberry*, and *Nettle Trees*, (the latter really gigantic, and the tender leaves are used as greens). About temples only, is a beautiful tree, with most fragrant flowers during the rains, which I suppose to be *Phillyrea angustifolia*. *Willows*, (one weeping,) abound in wet places.

"The smaller shrubs which beautify our hill-sides are chiefly *Jasmine*, (*yellow* and *white*,) *Barberry*, of two kinds, (the first has prickly holly-like leaves, and flowers in March, the other has much more entire leaves, though there are generally two or three prickles, and flowers in June, the fruits of both are excellent); *Raspberry*, of two sorts, (one with yellow fruit, which flowers in February and March, another with black fruit, flowering in June, the berries of both are very good); *Hawthorn*, of two kinds, (one erect, and the other grows in convoluted woody bushes, rising very little above the ground); a dwarf *Holly;* a *Laurel*, tasting strongly of *Cinnamon;* several species of *Ivy;* a gigantic *Asparagus;* two *Hyperica;* the *Daphne cannabina;* two species of *Clematis;* and a few others, of which I cannot even determine the genus. Whether most to blame my own stupidity, or the antiquity of my books, as the cause of failure, is a question I cannot answer—it may be owing to both.

"Of smaller plants, the fields are covered in spring by *Tulips*, while the wheat and barley are only peeping upwards; in the water-courses a yellow *Ranunculus*, and the *Primula dentata* everywhere abound; on shady banks a yellow-flowered *Strawberry*, and what I suppose a *Tiarella*, are prevalent; the fruit of the former is quite tasteless, though of a brilliant crimson; near the houses are *Thlaspi*, *Potentilla*, *Oxalis*, *Leontodon Taraxacum*, *Sonchus*, *Echinops*, *Mentha*, *Thymus*, at least three species, as many of *Viola*, *Silene*, *Rumex*, (both "*Sourocks* and *Dockens!*") *Plantago*, *Salvia*, *Gnaphalium*, *Cerastium*, *Scutellaria*, *Cynoglossum*, (two at least,) *Campanula*, *Glechoma*, *Malva*, three *Gentians*, (one the *G. Chirayita*, so much used as a bitter and febrifuge, by Europæans and natives,) *Campanula*, *Geranium*, and towards the rainy season, two species of what I suppose to be an *Osbeckia*, three of *Orchis*, (of one of which, the *bicornis*, I guess, we make very excellent salep, digging up the roots in September and October,) *Scabiosa*, *Begonia picta*, *Datura*, *Atropa*, *Delphinium*, *Anemone*, three splendid species of *Arum*, a *Cassyta*, some beautiful *Lilies*, a white one particularly grand, some *Cucurbitaceous* and *Malvaceous plants*, the places of which I cannot more decidedly fix, and in some warm spots many *Cannæ* and *Irides*. There are hundreds of *Grasses*, *Syngenesious*, *Leguminose*, and *Labiate plants*, of which I can say no more, than that I often admire them, and as often regret that I am no botanist. Of the fine *Mosses*, *Ferns*, and others of the *Cryptogamia*, I had better say nothing—which is about as much as I know.

"This is also a wonderfully rich country in *Zoology*. I feel convinced that a naturalist (in the extended sense of the word,) would find as many novelties in all the kingdoms of animated nature as Humboldt or Spix did in America. As relates to mineralogy, there may be less interest, though remains of *Shells* have lately been discovered in the snowy range, and there is perhaps much that would be brought to light by a well-versed geologist. In this immediate vicinity, we have masses of *granite*, *mica*, and *clayslate*, *quartz*, and *limestone*, that I should think could not much interest a geologist; but in glens, where the torrents have laid open the structures, veins containing *metals* have been found, and *iron* and *copper* have for ages been extensively obtained in these mountains.

"I may shortly allude to the vegetable productions that are used in domestic economy, or in commerce, in this part of the world. Of *fruits*, we have *Walnuts*, *Apricots*, *Mulberries*, the *White Peach*, *Pomegranates*, red and white *Raspberries*, *Barberries*, and *Kaephul*, all at this level, and very good of their kind; the *Cherries* are not edible, but make capital cherry-brandy; the *Pears* are harsh, and scarcely eatable until they are decayed, when they are very good. The *Vine* and cultivated *Peach* grow here, and flower luxuriantly, but the fruit does not ripen so high; *Oranges*, *Plantains*, and several *Limes* and *Lemons*, as well as *Mangoes*, are all brought from the warm vallies; *Plums* have been introduced and thrive most admirably; *Apples* and *Quinces* do not come to much perfection; *Strawberries*, and all British vegetables, seem to agree extremely well with the climate and soil. Of *Timbers*—the *Toon* (*Cedrela*) is found rather below our level; the *Sal* also; the *Deodar pine* affords excellent durable deal, of it our houses are built, (the wood-work I mean,) the other *Fir* is not so durable or large for timber, but it supplies excellent tar, and where *Deodar* is not procurable, as at Almora, the wood is employed in house building. *Walnut*, *Cherry*, and *Oak*, are used in limited quantities as timber, the last universally as firewood. The *Rhododendron* is despised both by carpenters and cooks, and little of it is consequently cut. The bark and leaves of the *Laurel* above-mentioned, are carried down to be used as substitutes for *Cinnamon; Chirayita* is also conveyed to the plains in very large quantities to be sold at the Company's medical depôts, and to native druggists. Hill *Capsicums* and *Turmeric* are both much valued below, and of course carried down; excellent paper is made from the *Daphne cannabina*, as follows:—(few insects touch it, and it is very strong, and consequently much valued) 'the bark is taken from the shrub in the cold season, (December and January); it is first well cleared of epidermis by a knife, then boiled with a large admixture of wood ashes and water for four or five hours, and thoroughly pounded by a wooden mallet on a smooth stone, afterwards well bleached in running water, the pulp is then ready to be spread on the moulds, the heat of the sun only being sufficient to dry it.' A coarse sugar is made from the flowers of the *Bassia*, and a concrete oil from its fruit. The rosin which exudes from the wounded *Pinus longifolia*, is exported to the plains under the name of *gundabirosa*, and by distillation from it very good oil of turpentine is obtained.

" I lately ascended a mountain which rises from the frontier river to the height of 8160 feet; it was in November, an unfavourable time for observing its vegetable productions, yet the scale on which *Rhododendrons* grew near the top, attracted my notice, and they seem more at home at that elevation than with us. *Oaks*, too, were gigantic; a *Rubus* and *Bamboo* we also noticed, which are unknown here. The last, which seldom attains the girth of the little finger, is used for mats and baskets. The *Daphne* and *Chirayita* were in great perfection; but I mention this journey that I might introduce a very curious circumstance. While we were scrambling over icy rocks, certainly more than 7000 feet above the sea, I was astonished to see fine *Palms* scattered here and there, far above the region of firs, among oaks and hoar-frost! they were of a respectable height, perhaps 24 feet, with the flabelliform leaves of the *Borassus flabelliformis* of the plains, or *toddy-tree*, and to my eye they differed in no degree from that tree, which luxuriates in the hot plains of Bengal, and of which I had not seen a single specimen since entering the hill provinces—can it be the same? If it be, I suppose it a singular case of a palm being indigenous in Bengal, with a mean annual temperature of 78° and upwards, and also in a bleak mountainous situation, where the annual mean cannot reach 54°. I know of no palms with fan-shaped leaves, except the toddy-tree, and some of very diminutive size, which may account for my supposing it a *Borassus*."

## NEW WORK ON CRYPTOGAMIC BOTANY.

[We have pleasure in mentioning, that W. H. Harvey, Esq. of Summerville, near Limerick, is preparing a work, to be published in monthly numbers, on the *new or little known Cryptogamic Plants* of the *British Isles:* the drawings and engravings, as well as descriptions, will be entirely executed by himself; and from our knowledge of Mr. Harvey's zeal and acquirements, we can confidently recommend it to Botanists.]

# BOTANICAL REMARKS.

### By the Rev. J. Farquharson, F.R.S.

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[About two years ago I took the liberty of putting some questions relative to the geographical limits, and elevation above the level of the sea, of the *Scotch Fir* and other native trees, to the Rev. Mr. Farquharson of Alford, Aberdeenshire, whose residence affords him peculiar advantages for pursuing such investigations. The results of his observations, as far as they were then carried, were highly interesting, and constitute a Memoir, which is published in the 2d Volume of the "*Edinburgh Journal of Natural and Geographical Science*," to which I must refer those who desire information on that head. Mr. Farquharson has not discontinued his researches; and those relative to the *Oak*, and the stations of some other British plants, have just been communicated to me in the following extract of a letter, dated 19th November, 1831.—*H.*]

"I have to communicate to you a few notices concerning those questions on which our correspondence began, and I think you may confide in their accuracy: the most important regards the *Oak*.

"I think I stated to you that this tree grows here to an elevation of 700 feet, and that our plantations of it are *Quercus Robur*—that many remains of oak-wood dug out of the ground, and constant tradition prove it was formerly a native here, but whether the aboriginal tree was the *Robur* or *sessiliflora*, I had been unable to ascertain. I have since examined carefully the only native tree, of the existence of which in this valley I was then aware. It is obviously a sucker, and a very thriving one, from the large root of an old tree, formerly cut down; and although it does not flower, the leaves and leaf-stalks leave no doubt that it is the variety of *sessiliflora*, named the *Durmast Oak.*—But the indication regarding the species of our former native forests, afforded by this solitary plant, is now fully confirmed by an examination of another considerable remainder of native oak, pointed out to me in October last, by the Hon. Walter Forbes of Brux, and of the existence of which, as it is surrounded by one of his fir plantations about six miles from this place, I was not aware. It is an old oak stool, of 3 or 4 acres, of very much stunted trees, none of the stems exceeding 6 inches in diameter. They, however, bore this year an abundant crop of acorns, which were all strictly sessile on the catkin. The leaves are not cottony below like those of the tree above-mentioned; but have longish slender stalks, obviously different from those of *Quercus Robur* in our plantations. I have received testimony from some aged persons, that they remember the cutting of old trees at this place, from the roots of which the present stunted ones have grown, so no doubt remains of their being native.

"The position and condition of this stool mark well the height to which the *sessiliflora* will grow. It extends up the face of a steep hill fronting the south, and the trees dwarf out at its upper edge at the height of 750 feet above the sea: the planted firs surrounding it above, as on all the other sides. This, then, may be considered the extreme height of the *sessiliflora* in lat. 57° 15′.

"These trees, though small, obviously have very seldom lost their extreme yearly shoots by the frost; and in this they differ greatly from our planted trees of *Quercus Robur*, the annual shoots of which are killed half-way down almost every year. The tree, of course, does not thrive, and never equals half the size of the *Beech* or *Mountain Elm* planted under equal circumstances. Besides, the *Robur* very rarely flowers, although we have plantations 92 years old. We may, therefore, I presume, be deemed just on the margin of its natural limit in the bottom of the valley 400 feet above the sea.

"I perceive, from your *British Flora*, that the inferiority of the wood of the *sessiliflora* is questioned. It is now certain that tree was once common in this part of Scotland; but although we have several ancient buildings, none of them are constructed of it, but of *Fir*. Does not this show that either the *Oak* buildings have perished, or that our ancestors already knew to put more trust in the *Fir?* England is full of ancient buildings of *Q. Robur*.

"Three plants have very curious localities; at the sea-shore, and again on the highest mountains. They are *Silene inflata, β.*, *Cochlearia officinalis*, and *Statice Armeria*, (*Hooker's Fl. Scot.*) I have found them all on the upper mountains of the Don and the Dee; but strictly confined, as far as I could perceive on a pretty extensive examination, to limited tracts of serpentine rocks, and the immediate margins of the streams below, and not remote from such regions. I am not aware that this curious fact has been formerly attended to. It shows the influence of soil. The serpentine contains magnesia, not otherwise found in our primitive district.*

"Although I have no authority for so doing, yet I cannot resist the pleasure of telling you, that our friend, Dr. Alexander Murray, discovered a patch of *Linnæa borealis* within three miles of this place, to which he directed me in October last: 'at Coreen, about 20 yards west of the foot-path leading from Culhay to Dubstone, in the north opening of a deep dingle that passes through the top of the hill.' The plant is there 1100 feet above the level of the sea, growing in a straggling manner over a space of about 200 square yards, amidst a tall, but rather open, growth of *Calluna vulgaris*, mingled with *Arbutus Uva ursi* and *Vaccinium Vitis Idea*—no wood near; *stems* trailing, of various lengths, but many of them a yard or two long, rooting for a great part of their length. Dr. Murray found it in full flower in July: the soil deep with dry bottom, but from the position, at the foot of a bank, receiving the full effect of every shower. I had formed no proper conception of the singular elegance of this plant. I transferred several slips of it to the garden here, where they obviously took root immediately, and if it prospers, I should conceive it might become a great favourite in the flower-garden."

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* The circumstance of these plants being confined, on the mountains of Aberdeenshire, to limited tracts of serpentine, is certainly remarkable; but I can hardly think it is the case on other mountains. For both in Britain and upon the continent, I believe these maritime plants to be common and almost universally found also on the more elevated mountains, whatever may be the nature of the soil.—*H.*

# CONTRIBUTIONS TOWARDS A FLORA OF SOUTH AMERICA AND THE ISLANDS OF THE PACIFIC. By W. J. Hooker, LL.D. and G. A. W. Arnott, Esq. A. M. F. R. S. E.

Under this title it is our intention to describe a very considerable collection of plants, from certain portions of South America, existing in our Herbaria and derived from various sources. This memoir was, in the first instance, undertaken with the view of making known to botanists the vegetable treasures brought home by Mr. Cuming from different places, principally from Peru and Chili, and some of the islands of the South Seas, and which alone constitute an herbarium of nearly 1400 species, collected and preserved in the most careful manner, and distributed with such numbers attached to them, as we have retained in the following list. But as we had received many of the same plants from other sources: for instance, those of Chili from Mrs. Maria Graham (now Mrs. Callcott), from our valued friends Alexander Cruckshanks, Esq. and Dr. Gillies, Messrs. Lay and Collie, the naturalists in Captain Beechey's expedition,* from Mr. Bridges and Mr. Mathews, two excellent collectors, who are still engaged in the same pursuit, the former in Chili, the latter in Peru; from the Horticultural Society, and from Professor Lindley, chiefly gathered by the collector, Mr. Macrae;—those of Peru from Mr. Cruckshanks and Mr. Mathews;—those of Juan Fernandez from Mrs. Graham, Mr. Douglas, and Dr. Scouler;—and those from the islands of the Pacific from the venerable Menzies, Messrs. Lay and Collie, and Mr. Mathews,—we gladly embrace the opportunity thus afforded us of noticing the whole of them together. We should certainly have confined our attention to the vegetable productions of the western side of the Andes, were it not for the circumstance that Dr. Gillies, whose residence was for many years at

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* The plants collected by these gentlemen are in course of publication, under the title of "Botany of Captain Beechey's Voyage, by Messrs. Hooker and Arnott."

Mendoza, at the eastern foot of the Andes, had made several excursions, on the one side, across the Cordilleras to the shores of the Pacific, and on the other, across the Pampas to the Atlantic, thus, as it were, connecting the botany of those remote and highly interesting regions. In his different journies, and in his excursions to the unfrequented heights of Uspallata, and to the still more unknown mountains of San Luis and Cordovas, Dr. Gillies carried with him a degree of scientific knowledge and a philosophical spirit of inquiry, such as have fallen to the lot of few travellers. Again, we find the collections we have received from Mr. Tweedie and the late Mr. Baird, from Buenos Ayres, the Uraguay, and a part of the Banda Orientale, so much allied to those of Dr. Gillies from the Pampas, that we should not do these individuals justice if we did not include their plants also. Mr. Baird, if we mistake not, went to Buenos Ayres as gardener to a Scottish agricultural establishment that had been formed there, and appears to have possessed a good deal of enterprise, to which we are perhaps indebted for the plants that he sent us. Of their exact locality we only know what may be learned by the following extract of a letter received from him, that bears date "Buenos Ayres, July 1, 1830. I undertook an expedition into the Missiones of Brazil, for the purpose of procuring the three following plants, the *Yerva de Paraguay*, commonly called *Paraguay Tea*, the *Cedar* (*Araucaria Brasiliensis*), and a plant which the natives call the *Weeping Tree*, and of which they aver that when touched, even on the warmest day of summer, it showers down a fluid, similar to a shower-bath. I got to within 15 leagues of the place where these plants grow, but want of water unfortunately compelled me to return. I brought home a good many plants, principally *Air-plants*, and a quantity of seeds. I saw also a beautiful tract of country, and was absent seven months, spending most of the time in open boats; but a great misfortune befel me in a severe feverish attack, from which I suffered six weeks, and lost all my plants and specimens of birds, &c. that I had previously collected. My illness took place at St. Anna, a spot that you may find laid down on the map, near the Uraguay River. Here I encountered a most severe shower of ice or hailstones, some of them measuring from 8 inches to a foot in circumference; the bark was stripped from the trees by the force with which they fell, and had a gun been fired upwards among the trees loaded with large shot, it could not have done more damage." Mr. Tweedie's plants appear to have been collected in nearly the same districts.

We shall divide our collections into three portions. I. Those of Extra-Tropical South America. II. Those of Peru and some allied territories: and III. Those of the Islands of the Pacific.

### 1. *Extra-Tropical South America.*

In this region we comprise the plants of our collections found in Chili, including the islands of Chiloe and Juan Fernandez, the Andes of Chili and of Mendoza, Mendoza with its plains or Pampas, and portions of San Juan de Cordova, as far as Buenos Ayres and the Banda Orientale. These, with the results of the labours of two excellent foreign botanists, MM. Bertero and Pöppig, who are still zealously collecting in Chili, when they shall be made known, will, we hope, give a tolerable idea of the vegetation of the last-mentioned country, at least. From M. Bertero, indeed, we have received a beautiful collection of Juan Fernandez plants; but being without permission to publish them, and as that able botanist intends to do so himself, we have abstained from all notice of them, except in those cases where we possess the same plant from other sources; and then we have felt that we should be doing M. Bertero a manifest injustice were we not to take notice of his, often, previous discoveries, and were we not to adopt his MS.* name, where such name was not pre-occupied, or for other reasons objectionable.

Although Fueillée, Molina and Ruiz and Pavon published Floras of Chili, yet the vegetable productions of that extensive district were little known to us till recent travellers visited it. Among the first must rank Mr. Cruckshanks and Dr. Gillies, who have not only enriched our Herbaria with many new and rare species, but our green-houses with many of their choicest ornaments. The residence of the former highly intelligent naturalist for a great length of time in the country, and his extensive excursions to Mendoza in one direction, and to Lima and Pasco in Peru* in another, have been productive of results highly favourable to science.

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* Several of these species have since been published in the *Bulletin des Sciences Naturelles.*

Mr. Cuming collected in various departments of natural history, and with a zeal that reflects great credit upon him. From Chiloe in the south, and along the coast at Maule Province, at Conception, Valparaiso, and to Coquimbo in the north, and from the coast inland to the Cumbre, an elevated pass in the Cordilleras, he has omitted no opportunity of gathering the best specimens of such plants as the season afforded. In many places he was greatly benefited by the friendly advice and the still more valuable assistance of Alexander Caldcleugh, Esq. to whose exertions, in various ways, natural history is much indebted.

The numbers between hooks, which follow the names of Mr. Cuming and Mr. Mathews, are those with which we have received their specimens, and under which they have been sent to others. But we must observe, that we cannot be answerable for every individual plant having been transmitted with precisely the same number; mistakes will occur, and a label is liable to be displaced, sometimes by the sender, sometimes by the receiver, and in both cases accidentally; while the consequence is, that the names will not always be found to correspond with the species so numbered. In regard to Mr. Cuming's plants, the greatest care, however, has been taken to distribute them correctly with the collections of the following botanists, and for which one of us (Dr. Hooker) is himself, in a great measure, responsible: namely, those of Mr. Brown, Mr. Bentham, Professor Lindley, Dr. Graham,

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* See the interesting and instructive Journey to Pasco of Mr. Cruckshanks, published in the 2d volume of this Miscellany, p. 168.

Mr. Arnott, Dr. Greville, Mr. Shuttleworth, and Professor Henslow.

1. (1.) Clematis *Bonariensis*, Juss.—Woods of Entro Rios and clay-banks of San Isedro, *Tweedie.* Mendoza, *Dr. Gillies.*—*β. sericea.* El Rio Quarto and Punta del Same, (Prov. of Cordova), *Dr. Gillies.*—Our specimen from San Isedro has broader foliage than the others.

2. (1.) Thalictrum *rutidocarpum*, DC.—El Cerro del Morro, (Prov. of San Luis), *Dr. Gillies.*

3. (1.) Anemone *decapetala*, Linn.—Valparaiso, *Mr. Cruckshanks; Mathews; Cuming* (*N.* 645.) Conception, and Baths of Collina, *Macrae.* Magote Aspera, Andes of Mendoza, *Dr. Gillies.* Banda Orientale, *Tweedie.*

4. (2.) Anemone *triternata*, Vahl.—Buenos Ayres, *Dr. Gillies.*

5. (1.) Ranunculus *humilis*, Collie *in Hook. and Arn. Bot. of Beech. Voy. v.* 1. *p.* 4. *t.* 2.—Conception, *Messrs. Lay* and *Collie.*

6. (2.) Ranunculus (Hecatonia) *trisepalus*, (Gill. *mst.*); erectus, ramosus, foliis omnibus longe petiolatis ellipticis integris obscure dentatis glaberrimis subtrinerviis, pedunculis oppositifoliis folii longitudine, sepalis 3 cito reflexis, petalis abortivis, capitulo oblongo, carpellis (sub-20) obovato-globosis subcompressis pulcherrime punctatis stylo brevissimo mucronulatis.—Buenos Ayres, *Dr. Gillies.* Valparaiso, *Cuming* (*No.* 706.)—*β.* foliis latioribus basi cordatis. Marsh woods of Rio Porana, *Tweedie.*—Allied to R. *pusillus*, and especially by means of our *var. β.* to R. *Bonariensis;* but the carpels are distinctly and beautifully punctated, the sepals constantly three, and the petals very minute or abortive. This, with R. *flagelliformis*, belongs to the genus *Cæsalea* of St. Hilaire, distinguished by the ternary arrangement of the floral coverings, which it is not always easy to observe in the dried plant, and which character must exclude several, otherwise very closely allied, species.

7. (3.) Ranunculus *flagelliformis,* Sm. *in Rees' Cycl.*—Valparaiso, *Bridges; Cuming* (*N.* 414.); *Mathews* (*N.* 292.)

8. (4.) Ranunculus *Cymbalariæ,* Pursh.—Banks of the river Tenuyan, (Prov. of Mendoza), *Dr. Gillies.*

9. (5.) Ranunculus *sceleratus,* Linn.—Buenos Ayres, *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 365.)

10. (6.) Ranunculus *Chilensis,* De Cand. ?—*Hook. et Arn. in Bot. of Beech. Voy. v.* 1. *p.* 4. *t.* 3. Valparaiso, *Mr. Cruckshanks; Bridges; Cuming* (*N.* 562.)—St. Hilaire places this species in the genus *Cæsalea,* and De Candolle says the flowers are minute; but in our specimens we always find the petals large and numerous, and so also Schlechtendal describes them. It is possible that our and Schlechtendal's plants may be distinct.

11. (7.) Ranunculus *peduncularis,* Sm. *in Rees' Cycl.*—R. polypetalus, *Gill. mst.*—Los Palomades, Valle del Tenuyan, Andes of Mendoza, *Dr. Gillies.*—This appears to be very variable, especially as to pubescence, and is most readily distinguished by its globose head of carpels, which have a long incurved persistent style; the stem has usually only one leaf and one flower, rarely two leaves and two flowers; the sepals are reflexed, and the habit is that of R. *bulbosus.*

12. (8.) Ranunculus *muricatus,* Linn.—Buenos Ayres, *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 384.)

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13. (1.) Drymis *Chilensis,* De Cand.—Juan Fernandez, *Douglas; Bertero; Cuming* (*N.* 1328.) Valparaiso, *Mr. Cruckshanks; Macrae; Bridges; Mathews* (*N.* 223.); *Cuming* (*N.* 644.) Curico, (Chili), *Dr. Gillies.*—The Juan Fernandez specimens have the leaves lanceolate and slightly glaucous beneath: in those from Valparaiso they are generally elliptical and exceedingly glaucous beneath; but Mr. Cuming's specimens from thence have narrower leaves that are glaucous on both sides. We fear the D. *Chilensis* must merge into D. *Winteri,* judging from specimens gathered at the Straits of Magellan.

14. (1.) Lardizabala *biternata*, R. et P.—Conception, *Cuming* (*N.* 803.) Valle del Rio Claro (Chili), *Dr. Gillies.* Nom. vernac. *Cogul.*

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15. (1.) Cissampelos *australis*, St. Hil.—Uraguay, *Tweedie.*

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16. (1.) Berberis *Chilensis* (Gill. *mst.*); spinis tripartitis subæqualibus folio longioribus, foliis coriaceis rigidis late obovatis cuneatis grosse subquinquedentatis dentibus spinosis rigidis obscure reticulatis subtus glaucis, racemis multifloris nutantibus folium æquantibus, baccis globosis nigris cæsio-pruinosis monospermis stylo apiculatis.—Province of Talca, (Chili), *Dr. Gillies.* Valparaiso, *Bridges.* Nom. vernac. *Michay.*—The spines are brown, and nearly equal in length. This species approaches to B. *flexuosa*, and to the following.

17. (2.) Berberis *ruscifolia*, Lam.—Buenos Ayres and Monte de San Antonio (Province of Cordova), *Dr. Gillies.*

18. (3.) Berberis *corymbosa*, (Hook. et Arn.); spinis brevibus trifidis (sæpe nullis), foliis submembranaceis obovatis mucronatis integerrimis petiolatis reticulatim venosis, racemis erectis corymbosis folium æquantibus, pedicellis gracilibus.—Juan Fernandez, *Mrs. Maria Graham; Douglas; Cuming* (*N.* 1338.)—Nearly allied to B. *latifolia*, Ruiz, and Pav. *Fl. Per. t.* 282. (from Peru), but that has the peduncles single-flowered and fasciculated, whereas our plant has long and corymbose or almost umbellate racemes.

19. (4.) B. *glomerata*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 5.—Coquimbo, *Messrs. Lay* and *Collie.*

20. (5.) B. *actinacantha*, Mart. in Schultes.—Baths of Collina, *Macrae.* Valparaiso, *Bridges; Cuming* (*N.* 434.); *Mathews* (*N.* 235.)—var. *β. minor;* foliis minoribus cuneatis cordato-rotundatisve sessilibus petiolatisve, petiolis nonnunquam folio longioribus.—Valparaiso, *Cuming* (*N.* 758.) Of the var. *β.*, as we are disposed to consider it, we have two specimens; one without flowers, which has most of the leaves nearly cordate and frequently upon a

long slender petiole; in the other the inflorescence and spines, though smaller than *α*, are similar in structure.

21. (6.) Berberis *Grevilleana*, (Gill. *mst.*); spinis tripartitis validis inæqualibus, foliis coriaceis rigidis anguste obovatis cuneatis angulato-spinoso-dentatis (dentibus subquinque) reticulatim venosis basi in petiolum brevem attenuatis, pedicellis unifloris 3–4 aggregatis folio brevioribus.—Vallies of the Andes of Mendoza, *Dr. Gillies.* Nom. vernac. *Pexe.*

22. (7.) Berberis *buxifolia*, Lam.—Chiloe, *Cuming* (*N.* 24.)

23. (8.) Berberis *empetrifolia*, Lam.—Elevated places in the Andes of Mendoza, *Dr. Gillies.* Cordilleras of Chili, *Macrae; Cuming* (*N.* 229.)—In addition to these species, Dr. Gillies possesses a specimen gathered by him in the Province of Maule in Chili, which may probably be referred to B. *virgata* of Ruiz and Pavon, although it is very short, and wants altogether the characteristic long branches of the plant from Peru; the two individuals correspond in all other respects. In Maule, its vernacular name is *Navanja.*

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24. (1.) Argemone *Mexicana*, Linn.—Pampas of Buenos Ayres and Mendoza, *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 764.)

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25. (1.) Fumaria *capreolata*, Linn.—Valparaiso, *Messrs. Lay* and *Collie.* Common in the orchards and gardens of Buenos Ayres, *Tweedie; Dr. Gillies.*

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26. (1.) Cardamine *tuberosa*, DC.—Sides of mountains near Valparaiso, *Bridges; Cuming* (*N.* 768.)

27. (2.) Cardamine *nivalis*, (Gill. *mst.*); glaberrima erecta basi decumbens, foliis pinnatis, foliolis 5–7 ovalibus angulatis, terminali majore obovato, siliquis linearibus elongatis pedicellisque erectis stylo acuminatis, petalis calyce duplo triplove longioribus.—Upper spring, below the Cumbre, Andes of Chili, *Dr. Gillies.*—This resembles some of the states of C. *hirsuta*, but has larger

leaves, with longer and more erect pods and pedicels.

28. (3.) Cardamine *hirsuta*, Linn.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Mr. Cruckshanks; Mathews* (*N.* 231.)—var. *β. simplicifolia.* Valparaiso, *Cuming* (*N.* 603.); *Mathews* (*N.* 340.)

29. (4.) Cardamine *affinis*, (Hook. et Arn.); foliis pinnatis foliolis subquinque lateralibus linearibus, terminali maximo obovato angulato-sinuato, superioribus ternato-pinnatis, foliolis omnibus sublinearibus terminali semper majore, petalis obovatis unguiculatis calyce duplo longioribus, siliquis (vix maturis) erectiusculis gracilibus in rostrum tenuissimum attenuatis.—Valparaiso, *Bridges.*—This bears the same relation to our C. *tenuirostris*, as C. *hirsuta* does to C. *parviflora*, differing only in the relative breadth of the leaflets, particularly of the terminal one.

30. (5.) Cardamine *tenuirostris*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 6.—Conception, *Messrs. Lay* and *Collie.*

31. (1.) Draba *Gilliesii*, (Hook. et Arn.); dense pubescens, foliis oblongis dentatis, radicalibus numerosis in petiolum attenuatis, caulinis remotiusculis sessilibus, petalis calyce duplo longioribus (albis), racemis fructiferis elongatis, siliculis elliptico-oblongis acutis contortis glabris pedicellum æquantibus, stylo elongato persistente.—Cordillera of Chili, below the Cumbre, *Dr. Gillies.*—*β.* stylo longiore. Cordillera of Chili, *Cuming* (*N.* 317.)—This, with the D. *violacea* and D. *alyssoides* of Humb. and Kunth, and a new species, D. *grandiflora* (Hook. and Arn.), from Antisana in Peru, found by Prof. W. Jameson, form a small groupe distinguished by their soft foliage, long style, and large white or purplish (not yellow) flowers, inhabiting exclusively the Andes of South America. Our present plant has somewhat of the habit of D. *incana;* but the flowers are much larger, the fructified racemes are considerably elongated, and the silicules are always twisted. In addition to this species, Dr. Gillies also

found a solitary specimen of D. *magellanica* at Cerro del Porcura, Andes of Mendoza.

32. (1.) Vesicaria *arctica*, Rich.—Hook. *Fl. Bor. Am. v.* 1. p. 48.—V. *andicola*, (Gill. *mst.*)—Los Cerros del Morro, de las Achiras, and del Porlezuelo, province of San Luis, (4000–6000 feet,) and Los Arenales, Villavicenzio, and San Rafaelle, Andes of Mendoza, *Dr. Gillies; Mr. Cruckshanks.*—The pouch is pubescent, the flowers fragrant.

33. (1.) Thlaspi *Andicola*, (Hook. et Arn.); glabrum, foliis subcarnosis oblongis integerrimis radicalibus petiolatis caulinis sessilibus, petalis calyce duplo longioribus, ovario subsexovulato, stylo filiformi ovarii vix longitudine.—Cordillera of Chili, *Cuming* (*N.* 318.)

34. (2.) Thlaspi *Magellanicum*, Pers.?—Cerro del Porcura, *Dr. Gillies.*—Dr. Gillies' specimens are in fruit only, so that the size of the petals is uncertain: they approach very closely to our last species.

35. (1.) Cremolobus? *linearifolius*, (Hook. et Arn.); pusillus herbaceus, foliis linearibus integerrimis, racemis dense paniculato-corymbosis, siliculæ lobis subglobosis rugosis immarginatis, stylo thecaphorum æquante.—Coquimbo, *Cuming* (*N.* 905.)—This curious little plant is not more than two inches high, and yet appears to be an entire specimen, wanting, however, the root, which is probably annual; it is branched and panicled above, where the linear and somewhat fleshy leaves are situated. It differs from *Cremolobus* by the turgid lobes of the silicule, which are quite destitute of margins, and it may perhaps form the type of a new genus.

36. (1.) Sisymbrium *officinale*, Br.—Conception, *Messrs. Lay* and *Collie.*

37. (2.) Sisymbrium? *Arnottianum*, (Gill. *mst.*); erectum, glaberrimum, ramosum, foliosum, foliis (superioribus) cor-

dato-ovatis obtusis sinuato-dentatis, calyce patulo petalis (albis) duplo breviore, siliquis linearibus (unciam longis), pedicellis patulis, stigmate subsessili bilobo.—El Morro, province of San Luis, (4500 feet,) and Villavicenzio, Andes of Mendoza, 5000 feet, *Dr. Gillies.*

38. (3.) Sisymbrium *Irio*, Linn.?—Near El Cerro Dorado, and Villavicenzio (5000 feet,) Andes of Mendoza, *Dr. Gillies.*—The state of our specimens precludes our ascertaining this plant with certainty; the petals appear white.

39. (4.) Sisymbrium *stenophyllum*, (Gill. *mst.*); erectum, glaberrimum, ramosum, foliis anguste linearibus inferioribus parce et grosse dentatis, superioribus integerrimis, calyce patulo, sepalis (purparascentibus) margine diaphano petalis (albis) parvulis brevioribus, pedicellis patentissimis, siliquis linearibus gracilibus erectis, stigmate subsessili umbilicato.—Las Achiras, province of Cordova, (3000 feet,) El Porlezuelo de la Casa de Piedra, Andes of Mendoza, (7000 feet,) *Dr. Gillies.*

40. (5.) Sisymbrium *sagittatum*, (Hook. et Arn.); erectum, strictum, glabrum, foliis inferioribus lanceolatis in petiolum latum attenuatis subruncinato-pinnatifidis, superioribus sensim minoribus et angustioribus sagittatis integerrimis, calyce patulo petalis breviore, siliquis longissimis linearibus gracilibus pedicellisque patentissimis, stigmate sessili obtuso.—Valparaiso, *Cuming* (*N.* 429.)

41. (6.) Sisymbrium *leptocarpum*, (Hook. et Arn.); erectum, ramosum, glaucescens, foliis lanceolatis sinuato-dentatis pinnatifidis inferioribus petiolatis superioribus sessilibus, calyce patulo petalis duplo breviore margine membranaceo, siliquis longissimis pedicellisque patentissimis, stigmate sessili obtuso.—Cordillera of Chili, *Cuming* (*N.* 315.)

42. (7.) Sisymbrium *frutescens*, (Gill. *mst.*); pubescens, valde ramosum, flexuosum, basi frutescens, foliis omnibus petiolatis triangulari-ovatis dentatis, siliquis linearibus elongatis tortuosis pedicellisque patentissimis, stigmate peltato umbilicato subsessili, calyce patulo.—Jarillal above

Mendoza, on the way to Villavicenzio, *Dr. Gillies.*—Our more perfect specimens are 5 or 6 inches high, the lower part decidedly fruticose; but we possess, also from Dr. Gillies, branches that are nearly a foot in length, gathered from much larger plants.

43. (8.) Sisymbrium *canescens,* Nutt.—Valparaiso, *Mr. Cruckshanks.* About Mendoza, Baths of Villavicenzio, western descent of the Uspallata mountains, Rio Quinto, province of San Luis, and Buenos Ayres, *Dr. Gillies.* Cordilleras of Chili, *Cuming* (*N.* 235.)

44. (1.) Erysimum? *pusillum,* (Gill. *mst.*); radice descendente collo multicipi, foliis radicalibus lineari-spathulatis integerrimis carnosulis sparse ciliatis, scapo 1-foliato vel nudo glabro, pedicellis 5–6 subcorymbosis, siliqua lineari brevi pedicello subduplo longiore, loculis 8-spermis, stigmate globoso subsessili.—El Cerro de la Porcura and la Cumbre de los Andes de Chili, (12,000,) *Dr. Gillies.* This has much the habit of a *Draba,* but the siliquæ are too long, and the radicle is dorsal; the valves are so strongly carinated and concave as to render the pod tetragonal.

### MATHEWSIA. (*Hook. et Arn.*)

*Calyx* æqualis, clausus. *Petala* lanceolata, unguiculata, ungue calycem excedente, limbo siccitate torto. *Stamina* edentula. *Stylus* subnullus: *stigma* capitatum. *Silicula* sessilis, elliptica vel lanceolata, valvis planis reticulatis medio uninerviis. *Semina* plurima, immarginata: *radicula* dorsalis subobliqua.—Suffrutex *ramosus valde foliosus.* Folia *subfasciculata, lineari-lanceolata, pinnatifida, minute pubescentia subtus pallidiora, pilis stellatim ramosis.* Racemi *elongati.* Flores *majusculi, flavi? siccitate fulvi.* Siliculæ *magnæ planæ.*

45. (1.) M. *foliosa,* (Hook. et Arn.—TAB. XCVI.)—Valparaiso, on the cliffs at Playa Ancha, *Bridges; Mathews* (*N.* 186.); *Cuming* (*N.* 642.)—Although it may be difficult to distinguish this plant generically from *Draba,* yet

on account of its great difference in habit we have no hesitation in availing ourselves of the position of the radicle and some other characters of minor note, to separate it as a new genus. In character it seems also to approach very closely the *Stenopetalum* of Mr. Brown, and should rank next to it. Bridges sent this plant as a *Schizopetalum*, and we are inclined to suspect it to be the S. *lanatum* of Miers, yet undescribed.

Tab. XCVI. *Fig.* 1. Flower. *Fig.* 2. Stamens and pistil. *Fig.* 3. Pistil. *Fig.* 4, 5. Siliculæ (natural size). *Fig.* 6. Embryo. *Fig.* 7. The same, cut transversely:—*magnified.*

46. (1.) Senebiera *pinnatifida*, DC.—Valparaiso, *Mathews* (*N.* 325.); *Bridges;* Buenos Ayres, *Dr. Gillies.*

47. (1.) Lepidium *spicatum*, Desv.—Valparaiso, *Bridges; Mathews* (*N.* 183.)—β. foliis laciniato-pinnatifidis. Valparaiso, *Cuming* (*N.* 370.* *bis?*)

48. (2.) Lepidium *ruderale*, Linn.—Abundant at the Jarillal above Mendoza, *Dr. Gillies.*

49. (3.) Lepidium *Bonariense*, Linn.—Buenos Ayres, *Dr. Gillies; Tweedie.*

50. (4.) Lepidium *bipinnatifidum*, Desv.—Valparaiso, *Bridges; Cuming* (*N.* 751.); *Messrs. Lay* and *Collie.*

51. (1.) Capsella *Bursa-pastoris*, Mænch.—Conception, *Messrs. Lay* and *Collie.* Pampas, *Dr. Gillies.*

52. (1.) Menonvillea *linearis*, DC.—α. foliis angustis plerumque indivisis.—Valparaiso, *Mr. Cruckshanks; Cuming* (*N.* 518.) Coquimbo, *Cuming* (*N.* 889.) Conception, *Messrs. Lay* and *Collie.*—β. robustior, foliis latioribus subcarnosis sæpe pinnatifido-divisis.—Valparaiso, near the sea, *Mathews* (*N.* 344.); *Cuming* (*N.* 441.) Cordillera of Chili, *Cuming* (*N.* 192.)

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* We find a No. 370 to be a *Corrigiola.*

53. (1.) Hexaptera *pinnatifida*, Gill. et Hook. *in Bot. Miscel. v.* 1. *p.* 350. *t.* 72.—Quebrada de Rios in Andes of Chili, Valle Hermosa, and Valle Tenuyan, in Andes of Mendoza, *Dr. Gillies.*

54. (2.) Hexaptera *spathulata*, Gill. et Hook. *l. c. tab.* 73.—Elevated places in the Andes between Chili and Mendoza, *Dr. Gillies.*

55. (3.) Hexaptera *cuneata*, Gill. et Hook. *l. c. tab.* 74.—Between Cortaderos and Rio de las Vacas, in Andes of Mendoza, *Mr. Cruckshanks.* Valle del Rio Mendoza, near Ladera de Jaule, *Dr. Gillies.*

56. (1.) Schizopetalum *Walkeri*, Sims.—Santa Maria, Cordillera of Chili, *Dr. Gillies.* Valparaiso, *Mr. Cruckshanks; Cuming* (*N.* 709.)—This varies as to pubescence; and we are uncertain whether S. *lanatum* of Miers be a variety or whether it be our *Mathewsia foliosa.*

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57. (1.) Cleome *heptaphylla*, Linn.—Buenos Ayres, *Tweedie.*

58. (2.) Cleome *psoraleæfolia*, DC.—El Porlezuelo, pro vince of San Luis, *Dr. Gillies.*

59. (3.) Cleome *affinis*, DC.—Missions of Brazil, *Tweedie.*

### ATAMISQUEA. *Miers.*

*Calyx* 4-sepalus, *sepala* 2 exteriora (inferius et superius) ovata, obtusa, concava, intus villosa: interiora 2, iis alternantia, multo minora, oblonga, obtusa, villosa. *Torus* carnosus fundum calycis tegens, triangularis, angulis in dentes productis unicum superiorem ligulæformem, duos laterales minutissimos. *Petala* 4, lineari-lanceolata, obtusa, concava, intus villosa, duo e margine tori ad latera ejus dentis superiores oriuntia, duo ad dorsum dentium lateralium. *Stamina* ima basi monadelpha: *androphorum* villosum globosum basin thecaphori cingens, ad latus superius valde gibbosum: *filamenta* 6 glaberrima, sursum curvata; septimum? abortivum, brevissimum, spinulæforme, inter duo superiora. *Antheræ* oblongæ, biloculares. *Pistillum* clavatum acumi-

natum, sursum curvatum: *stylus* brevis: *stigma* acutum, simplex. *Thecaphorum* elongatum (semiunciam longum), lepidotum. *Bacca?* globosa, indehiscens, crustacea, dense lepidota, stylo apiculata, monosperma. Albumen 0. *Embryo* carnosus, albus, incurvus; *cotyledones* magnæ, crassæ, invicem longitudinaliter plicato-convolutæ: *radicula* teres, lateralis (= o), supera.—Frutex *durus, ramosus.* Rami *teretes, grisei, sublepidoti, ultimi angulo recto divergentes, recti, sensim attenuati* (*ideoque in parte fruticis inferiore spinescentes?*). Folia *in ramos ultimos alternantia, brevissime petiolata, lineari-oblonga, basi apiceque emarginata, supra canaliculata viridia, subtus lepidota, nervo carinata.* Pedunculus *axillaris solitarius simplex.* Calyx *atque* petala *externe lepidota.*

60. (1.) Atamisquea *emarginata*, Miers, Chili, *v.* 2. *p.* 529.—Uncultivated places about Mendoza, *Dr. Gillies.*—Nom. vernac. *Atamisqua.*—As there are no descriptions accompanying the catalogue at the end of Mr. Miers' work, we could not have ascertained the present to be the plant intended by him, had not Dr. Gillies informed us that he was present when Mr. Miers proposed to give it the above generic name. Its principal affinity is with *Capparis.*

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61. (1.) Azara *serrata*, R. et P.—Valparaiso, *Mathews* (*N.* 232.); *Cuming* (*N.* 624, in herb. Hook., mixed with A. *integrifolia.*)

62. (2.) Azara *dentata*, R. et P.—La Guardia del Maypu, Chili, *Dr. Gillies.* Valparaiso, *Messrs. Lay* and *Collie.* Cordillera of Chili, *Cuming* (*N.* 270.)—Nom. vernac. *Corqulin.* (Gill.)

63. (3.) Azara *integrifolia*, R. et P.—Valparaiso, *Messrs. Lay* and *Collie; Mathews* (*N.* 233.); *Cuming* (*N.* 624, in herb. Arn., and mixed with A. *serrata* in herb. Hook.)

64. (4.) Azara *celastrina*, Don.—A. *Lilen*, Bertero; Lilenia, nov. gen. Bert.—Valparaiso, *Macrae; Mathews* (*N.* 319.); *Bridges.* Cordillera, *Cuming* (*N.* 271.) Chili, *Dr. Gillies.*—Nom. vernac. *Lilen.*

65. (5.) Azara *Gilliesii*, (Hook. et Arn.); foliis ovalibus spinoso-dentatis glabris longe petiolatis, floribus axillaribus simplicissime racemosis, pedicellis brevissimis ex excavationibus rachidis crassæ oriuntibus, perianthio 4–5-partito patente.—Chili, *Dr. Gillies.*—Nom. vernac. *Navanjillo.*—Closely allied to the last species, but very distinct in the inflorescence. If there be stipules at all, they must be deciduous, for there are none on our specimens. We have seen no stamens, and from the appearance of the fructiferous receptacle, we consider this, as well as A. *celastrina*, to be diœcious. The peduncle or rachis is thick, and furnished with a number of little excavations, out of each of which springs a short stout pedicel; at the lower edge of the excavation is a small deciduous bractea.

66. (1.) Helianthemum *Brasiliense*, Pers.—Pampas of Buenos Ayres, *Dr. Gillies.*

67. (1.) Viola *maculata*, Cav.—Conception, *Messrs. Lay* and *Collie; Cuming* (*N.* 795.)—var. *β. minor;* foliis subrhomboideis, petalis saturatioribus, calyce glabro.—Cordillera of Chili, *Cuming* (*N.* 194.)

68. (2.) Viola *rubella*, Cav.—Conception, *Macrae; Messrs. Lay* and *Collie; Cuming* (*N.* 130.) Valparaiso, *Mathews* (*N.* 248.); *Bridges.* Chiloe, *Cuming* (*N.* 25.)—Some of our specimens approach so near the V. *stipularis*, Cav. (V. *setosa*, Sm.), that we do not see how the latter can be distinguished. To V. *rubella*, Gingins has already united the V. *chamœdrifolia*, R. and P., and V. *teretifolia*, Humb. and Kunth.

69. (3.) Viola *congesta*, (Gill. *mst.*); trunco crasso tortuoso, foliis in apicem ramorum dense stellatim congestis rotundato-spathulatis ciliatis superne grosse serratis in sinubus glandula alba supra subrugosis subtus glandulis oblongis fuscis obsitis, petiolis latis, stipulis 3 quorum intermedia bifida, pedunculis foliorum longitudine. (Tab. XCVII.)—Near the summit of Cerro de la Polcura, Andes

of Mendoza, *Dr. Gillies.* Of this singular plant it is unfortunate that neither flower nor perfect fruit exists on Dr. Gillies' specimens; according to the description by Gingins of V. *Cotyledon*, it seems closely allied to it.

TAB. XCVII.—*Fig.* 1. Upper-side of a leaf with its stipules. *Fig.* 2. Under-side of do.:—*magnified.*

70. (4.) Viola *volcanica* (Gill. *mst.*); acaulis, radice fusiformi superne divisa, foliis dense cæspitosis ovatis obtusis marginibus lanatis serrato-pinnatifidis longiuscule petiolatis supra reticulatim rugosis subtus glandulis paucis fuscis linearibus, stipulis 3 quarum intermedia bifida, pedunculis gracilibus petioli longitudine.—(TAB. XCVIII.) Among loose pumice-stones near the summit of the volcanic mountain Cerro del Diamante, *Dr. Gillies.*

TAB. XCVIII.—*Fig.* 1. Upper-side of a leaf with stipules. *Fig.* 2. Under-side of do.:—*magnified.*

71. (5.) Viola *pusilla* (Hook. et Arn.); annua? acaulis, radice gracili subfusiformi, foliis congestis ovato-spathulatis obtusis margine petioloque lanatis utrinque glabris eglandulosis junioribus crenato-serratis.—Cordillera of Chili, *Cuming* (*N.* 289.)

71* (6.) Viola *Asterias* (Hook. et Arn.); annua, acaulis, radice tenui fusiformi, foliis stellatim dispositis linearibus basi attenuatis margine calycibusque lanato-hirsutis, pedunculis folio dimidio brevioribus.—(TAB. XCIX.) Valparaiso, *Cuming* (*N.* 711.) This, and the three preceding species, constitute a natural little groupe of *Viola*, remarkable for the crowded and stellated disposition of their leaves, which are strongly fringed with woolly hairs.

TAB. XCIX.—*Fig.* 1. Side view of a flower. *Fig.* 2. Front view of the lower petal:—*magnified.*

72. (1.) Ionidium *glutinosum*, Vent.—Buenos Ayres, *Dr. Gillies; Tweedie.*

73. (2.) Ionidium *parviflorum*, Vent.—Conception, *Messrs. Lay* and *Collie; Cuming* (*N.* 808.)

74. (3.) Ionidium *diffusum* (Gill. *mst.*); suffruticosum, ramis diffusis glabris junioribus bifariam puberulis, foliis oppo-

sitis oblongis mucronatis integerrimis utrinque et ad marginem setulis paucis appressis instructis petiolo puberulo gracili brevi multo longioribus, pedunculis axillaribus petiolum subæquantibus glabris flores 4–5 minutos umbellatim dispositos gerentibus, pedicellis pedunculo æqualibus, sepalis dorso setulosis margine diaphano glabro.—Buenos Ayres, *Dr. Gillies.* We have seen no corolla.

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75. (1.) Polygala *thesioides,* Willd.—Valparaiso, *Mathews* (*N.* 249.); *Bridges; Cuming* (*N.* 693.)

76. (2.) Polygala *gnidioides,* Willd.—*α.* glabra, foliis acutis. —Valparaiso, *Cuming* (*N.* 632.)—*β.* pubescenti-pilosa, foliis obtusiusculis.—Mountains near Mendoza, *Dr. Gillies.* Capsule scarcely at all emarginate; seeds pilose. Mr. Cuming says the flowers are red, blue, or white. This species belongs rather to the section *Timatua,* DC.

77. (3.) Polygala *Neæi,* DC.—Near San Bernardo and El Punto del Sauce, province of Cordova, *Dr. Gillies.*—Capsule scarcely notched: seeds pilose. Stems densely pubescent, sometimes almost villous. This seems only to differ from the last species by the much narrower leaves.

78. (4.) Polygala *polycephala,* St. Hil. Fl. Bras. Merid. *v.* 2. *p.* 84.—Buenos Ayres, *Dr. Gillies.* Uraguay, *Tweedie.*

79. (5.) Polygala *linoides,* Poir.—Pampas of Buenos Ayres, *Dr. Gillies.* Banda Oriental, *Tweedie.*

80. (6.) Polygala *distans,* St. Hil. Fl. Bras. Merid. *v.* 2. *p.* 84. —Uraguay, *Tweedie.*

81. (7.) Polygala *obovata,* St. Hil. Fl. Bras. Merid. *v.* 2. *p.* 37. —Uraguay, *Tweedie.*

82. (8.) Polygala *spinescens* (Gill. *mst.*); fruticosa, dense ramosa, rigida, ramulis spinescentibus junioribus solummodo foliiferis, foliis minutissimis subulatis alternis, racemis paucifloris laxis, corollæ carina cristata, capsula oblonga glabra vix marginata.—On dry hills near El Agua de los Cielos, Mendoza, *Dr. Gillies.*

83. (1.) Monnina *linearifolia,* R. et P.—Valparaiso, *Mr. Cruckshanks; Cuming* (*N.* 740.); *Mathews* (*N.* 222.); *Bridges.* Coquimbo, *Messrs. Lay* and *Collie.*

84. (2.) Monnina *pterocarpa,* R. et P.—var. *β. angustifolia.* M. angustifolia, DC.—Mountains near Mendoza, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 252.)

85. (3.) Monnina *cardiocarpa,* St. Hil. Fl. Bras. Merid. *v.* 2. *p.* 60. *t.* 93.—Uraguay, *Baird.*

86. (1.) Krameria *cistoidea,* Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 8. *t.* 5.—Coquimbo, *Mr. Cruckshanks; Mr. Macrae; Messrs. Lay* and *Collie.* Cordillera of Chili, *Cuming* (*N.* 275.)

87. (1.) Frankenia *Chilensis,* Presl.—Chili, *Cuming* (*N.* 101.) Coquimbo, *Cuming* (*N.* 879.)

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88. (1.) Silene *Gallica,* Linn.—Conception, *Messrs. Lay* and *Collie.* Buenos Ayres, *Dr. Gillies.* Valparaiso, *Mr. Cruckshanks; Mathews* (*N.* 256.); *Cuming* (*N.* 412, a remarkable monstrosity). Juan Fernandez, *Mr. Douglas.*

89. (2.) Silene *andicola* (Gill. *mst.*); pubescenti-glandulosa, erecta, subpaniculatim ramosa, ramis erectis, foliis ovato-oblongis acutis, calyce magno campanulato 5-dentato petalis bifidis vix breviore.—El valle de Fray Carlos, Andes of Chili, *Dr. Gillies.* In some respects it bears a resemblance to the S. *ciliata* of the Pyrenées.

90. (1.) Sagina *procumbens,* Linn.—Roofs of houses in Buenos Ayres, *Dr. Gillies.* Chiloe, *Cuming* (*N.* 21.) The specimens from Chiloe are much tufted, and the leaves are terminated by a more evident mucro than those from Dr. Gillies, or our Europæan individuals.

91. (1.) Arenaria *rubra,* Linn.—Valparaiso, *Bridges; Messrs. Lay* and *Collie; Cuming* (*N.* 401.) Juan Fernandez, *Bertero; Douglas.*

92. (2.) Arenaria *media,* DC.—Buenos Ayres, *Dr. Gillies.*

Valparaiso, *Mr. Cruckshanks; Bridges; Cuming* (*N.* 550.)

93. (3.) Arenaria (Spergularia) *Bonariensis* (Gill. *mst.*); glabra vel puberula, caulibus elongatis decumbentibus remote foliosis, foliis lineari-filiformibus carnosulis rigidiusculis internodio brevioribus, panicula dichotoma stricta multiflora, sepalis lanceolatis acutis margine scariosis, pedunculis fructiferis erectis, seminibus ala membranacea alba striata fimbriata cinctis.—Ditches near Buenos Ayres, *Dr. Gillies.*

94. (4.) Arenaria (Arenarium) *andicola* (Gill. *mst.*); glabra prostrata ramosa, foliis lineari-oblongis subspathulatis obtusis carnosulis enerviis, pedunculis axillaribus solitariis unifloris folio longioribus, sepalis obtusis aveniis petala subæquantibus, capsula polysperma sub-4-valvi, stylis plerumque 4, seminibus lævibus atris nitidissimis. —*β. major;* ramis pedunculisque magis elongatis.—El Peñon, and El valle de Fray Carlos, Chili, *Dr. Gillies.* Very closely allied to A. *serpens,* Humb. and Kunth, but it does not creep, nor are the leaves ciliated at the base, although on their sheathing portion one or two denticulations may sometimes be seen.

95. (1.) Cerastium *vulgatum,* Linn.—Buenos Ayres, and Mountains of Mendoza, *Dr. Gillies.*

96. (2.) Cerastium *latifolium,* Linn.—*β. glabrum.* C. Grahamii, Gill. *mst.*—La Falda, near Los Chacayes, Andes of Mendoza, *Dr. Gillies.*

97. (3.) Cerastium *arvense,* Linn.—*α. alpinum,* Benth.—Andes of Mendoza, *Dr. Gillies.*—*β. commune,* Benth.—Valparaiso, *Mr. Cruckshanks; Bridges; Mathews* (*N.* 175.) Conception, *Messrs. Lay* and *Collie.*—*γ. strictum,* Benth. C. Mendocinense, Gill. *mst.*—Sides of mountains near Mendoza, (5000 feet,) *Dr. Gillies.* In Dr. Gillies' specimens of both *α.* and *β.* the mature capsule is scarcely so long as the calyx.

98. (1.) Viviania *marifolia,* Cav.—Macræa rosea, Lindl.—

Hook. *in Bot. Misc. v.* 1. *t.* 5.—La Guardia in the Cordillera of Chili, *Mr. Cruckshanks.* Summit of San Pedro Nolasco, the highest mountain of Chili, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 232.)

99. (2.) Viviania *grandifolia,* Lindl.—Baths of Collina, Chili, *Macrae.* Valle del Fray Carlos, *Dr. Gillies.*

100. (3.) Viviania *crenata* (G. Don); foliis ovatis subsessilibus crenatis subtus niveo-tomentosis lineatis, calycibus ovatis inflatis, (petalis albis).—Macræa crenata, Gill. et Hook.—At La Guardia, Cordillera of Chili, *Mr. Cruckshanks; Dr. Gillies; Cuming* (*N.* 287.)

101. (4.) Viviania *petiolata* (Hook. et Arn.); foliis rotundato-cordatis petiolatis profunde crenato-serratis subtus niveo-tomentosis lineatis, calycibus cylindraceis, (petalis albis).—Valparaiso, *Mathews* (*N.* 362.); *Cuming* (*N.* 430.) This has the largest leaves of the genus; in one specimen they are an inch long and on a very evident petiole, always broad and coarsely crenato-serrate. It is the only species we yet know that inhabits the plains.

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102. (1.) Linum *aquilinum,* Mol.—L. oligophyllum, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 11. (an Schiede?)—L. *Chamissonis,* Schiede.—Nnancu-laguen. Feuill. Chil. *v.* 3. *t.* 22.—Mountains near Valparaiso, *Bridges;* Conception, *Messrs. Lay* and *Collie.*—*β. grandiflorum,*—Conception, *Cuming* (*N.* 127.)

103. (2.) Linum *junceum,* St. Hil. Fl. Bras. Merid. *v.* 1. *p.* 134. *t.* 26.—Uraguay, *Baird.*

104. (3.) Linum *usitatissimum,* Linn.—Conception, *Messrs. Lay* and *Collie.*—Probably introduced.

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105. (1.) Malva (Malvastrum) *sulphurea,* (Gill. *mst.*); ubique stellato-tomentosa albida, caule prostrato subargenteo-leproso, foliis breviter petiolatis cordato-reniformibus sublobatis dentato-crenatis supra argenteo-leproso-squamulosis, pedunculis axillaribus solitariis folio subbrevioribus, involucelli foliolis 3 lineari-setaceis deciduis, corolla (sulphurea siccitate æruginosa) extus lineis hir-

sutis.—Road-sides, and about houses, near Mendoza, *Dr. Gillies.* Allied to M. *leprosa*, Cav.

106. (2.) Malva (Malvastrum) *humilis*, (Gill. *mst.*); subacaulis, radice multicipi, foliis longe petiolatis cordatis 3–5-lobis obtuse crenatis petiolisque dense molliter stellato-tomentosis, lobis imbricatis, pedunculis axillaribus petiolo brevioribus solitariis 1-floris, involucelli foliolis 3 linearibus deciduis, carpellis tomentosis, (flore purpureo.)—El valle Hermoso, Andes of Mendoza, *Dr. Gillies.*

107. (3.) Malva? *peduncularis*, (Hook. et Arn.); adscendens parce stellatim pubescens, foliis longe petiolatis cordato-subrotundis obtuse 5–7-lobatis crenatis, lobo medio paullum majore, stipulis oblongis obtusiusculis persistentibus, pedunculis axillaribus elongatis petiolo longioribus solitariis unifloris, involucelli foliolis 3 oblongis sepala æmulantibus et æquantibus, corolla subcampanulata (alba.)—Ditches near San Isedro, *Tweedie.* Not having seen the fruit, we can scarcely declare this to be a *Malva*, as it has little affinity with any other species; if belonging to this genus, it may rank in the section *Bismalvæ.*

108. (4.) Malva (Malvastrum) *tenuifolia*, (Hook. et Arn.); caule decumbente tomentoso, foliis canescenti-tomentosis bipinnatisectis, segmentis anguste linearibus acutis, pedicellis tomentosis axillaribus solitariis unifloris, involucelli foliolis 3 lineari-subulatis membranaceis coloratis deciduis, calyce tomentoso, carpellis 10 muticis.—Province of Maule, *Cuming* (*N.* 841.) This, M. *miniata*, and M. *tenella*, have precisely the same kind of spurious involucel, and, so far as that affords a character, the three species ought to be placed in the same genus. *M. Munroana* is in the same case, and *Sida coccinea* only differs by having one, instead of three leaflets, under its calyx. All of them bear bright red flowers, similar to the Cape species of *Malva.*

109. (5.) Malva *parviflora*, Linn.—Conception, *Messrs. Lay* and *Collie.*

110. (6.) Malva *crispa*, Linn.—Mendoza and Buenos Ayres, *Dr. Gillies.*

111. (7.) Malva *tenella*, Cav.—San Carlos, near Mendoza, *Dr. Gillies.* Our specimens are larger and stouter than those figured by Cavanilles. In many respects it is allied to M. *miniata*, but the nearly sessile axillary flowers and shape of the fruit, easily distinguish it.

112. (8.) Malva *miniata*, Cav.—Mendoza, *Dr. Gillies.* The carpels are bisetose, as in many *Sidæ.*

113. (9.) Malva *Limensis*, Linn.—Coquimbo, *Cuming* (*N.* 895.)

114. (10.) Malva *obtusiloba*, Hook. *in Bot. Mag. t.* 2787.—Valparaiso, *Mr. Cruckshanks; Bridges; Mathews* (*N.* 263.); *Cuming* (*N.* 517.) Andes of Mendoza, *Dr. Gillies.* (sub *M. flexuosa, Gill. mst.*)

115. (11.) Malva (Sphæroma) *Bonariensis*, Cav.; ramis tomentosis, foliis petiolatis ovatis trilobis supra pubescentibus subtus molliter dense stellatim tomentosis superioribus lanceolatis, floribus parvis (purpureo-roseis) in axillis glomeratis, calycibus dense tomentosis, involucelli foliolis lineari-setaceis deciduis.—Cav. Diss. 2. t. 22. f. 1.—Sphæralcea Cisplatina, St. Hil. Fl. Bras. Merid. *v.* 1. *p.* 210?—Punto del Sauce, province of Cordova, *Dr. Gillies.* Pasture-fields, Buenos Ayres, *Tweedie.* The affinity of this is with M. *angustifolia*, but their foliage is widely different. The plant of St. Hilaire is said to have racemose and secund flowers.

116. (12.) Malva *glomerata*, (Hook. et Arn.); erecta, parce stellatim pubescens, foliis (superioribus) triangulari-oblongis grosse crenato-serratis petiolo triplo longioribus, pedunculis solitariis axillaribus folio duplo longioribus glomerato-umbelliferis, involucelli foliolis 3 anguste oblongis calyce duplo brevioribus, (corolla parva.)—Woods of the Porana, *Tweedie.* This bears a great resemblance to M. *umbellata*, Cav., but the flowers are not one-tenth of the size of those in that species. We have seen only one specimen, it is from the upper part of the plant, and without fruit.

117. (13.) Malva *eriocarpa*, DC.—Conception, *Messrs. Lay* and *Collie*; Valparaiso, *Cuming* (*N.* 552.); *Macrae;* Juan Fernandez, *Douglas; Dr. Scouler.*

118. (14.) Malva (Modiola) *geranioides*, (Gill. *mst.*); prostrata, setoso-pilosa, foliis palmatim 5-lobis, lobis pinnatifidis inciso-dentatis seta terminatis, pedunculis folio duplo triplove longioribus, involucelli foliolis 3 oblongo-lanceolatis sepalis lanceolatis subdimidio brevioribus, (corolla majuscula.)—Mendoza, *Dr. Gillies.*

119. (1.) Pavonia *communis*, St. Hil. Fl. Bras. Merid. *v.* 1. *p.* 224.—Shady woods of the Porana, *Tweedie; Dr. Gillies.*

120. (2.) Pavonia *hastata*, Cav.—Althæa grandidentata, *Gill. mst.*—Dry banks, Buenos Ayres, and woods of the Banda Oriental, *Tweedie.* Province of San Luis, (5000 feet,) *Dr. Gillies.* This species surely belongs to the *Labretonia* of Schrank, if that genus be really distinct from *Pavonia.* The leaves, particularly the young ones, have pellucid dots.

121. (1.) Hibiscus (Abelmoschus?) *angustifolius*, (Hook. et Arn.); caule erecto fruticoso, ramis petiolis pedunculisque aculeatis, foliis (superioribus) lanceolatis acuminatis dentato-serratis glabriusculis, involucelli foliolis 10 linearibus setoso-ciliatis calyce dimidio brevioribus, pedunculo petiolum æquante solitario axillari simplici, tubo staminifero petalis duplo breviore.—Marsh, Rio de la Plata, *Tweedie.* Of this we do not know the fruit: it appears to approach closely to H. *Cisplatensis*, St. Hil.

122. (1.) Cristaria *betonicæfolia*, Pers.—Feuill. Chil. *v.* 3. *t.* 27.—Valparaiso, *Bridges.*

123. (2.) Cristaria *glaucophylla*, Cav.—Valparaiso, *Cuming* (*N.* 356.)

124. (3.) Cristaria *eriantha*, (Hook. et Arn.); adscendens, parce stellato-pilosa, foliis cordatis sub 5-lobatis, lobis rotundatis inciso-crenatis intermedio sublongiore, pedunculis solitariis unifloris axillaribus folio longioribus calyce longe molliter piloso.—Valparaiso, *Cuming* (*N.* 510.) The fruit of this species we have not seen, but it

appears intermediate between C. *heterophylla* and C. *glaucophylla:* it is most allied to the former, differing from it by the broader and more obtuse foliage, and by the soft, almost woolly calyx.

126. (4.) Cristaria *heterophylla*, Hook. et Arn.—Sida *heterophylla*, Cav.—Plains of Mendoza, *Dr. Gillies; Mr. Cruckshanks.*—*β.* pilis stellatis hispidis. C. hispida, *Gill. mst.*—Los Hornillas, Andes of Mendoza, *Dr. Gillies.*—The segments of the upper leaves are very sharp. The fruit is that of a *Cristaria.*

127. (5.) Cristaria *multifida*, Cav.—Coquimbo, *Cuming* (*N.* 1436.)

128. (6.) Cristaria *pinnatifida*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 12.—Coquimbo, *Messrs. Lay* and *Collie.*

129. (7.) Cristaria *dissecta*, (Hook. et Arn.); annua, stellato-pubescens, foliis digitato-5-partitis segmentis cuneato-lanceolatis inciso-pinnatifidis foliorum superiorum angustissimis, panicula elongata multiflora, pedicellis elongatis, (floribus parvis), ala carpellis multo majore.—Valparaiso, *Mathews* (*N.* 182.); *Cuming* (*N.* 741.) Cordillera of Chili, *Cuming* (*N.* 245.)—Sometimes the leaves are only 3-partite, but then the lateral segments are again bipartite.

130. (1.) Anoda *hastata*, Cav.—Valparaiso, *Mr. Cruckshanks.* Buenos Ayres, and Chili, *Dr. Gillies.*—Perhaps Dr. Gillies' specimens ought to be referred to A. *triloba*, but we cannot see any certain marks between them.

131. (1.) Sida *rhombifolia*, Linn.—Buenos Ayres, *Dr. Gillies.*

132. (2.) Sida *hastata*, St. Hil. Fl. Bras. Merid. *v.* 1. *p.* 190. *t.* 36. *f.* 2.—Pampas of Buenos Ayres, *Dr. Gillies.* Uraguay, *Tweedie.*

133. (3.) Sida *Jussiæana*, DC. ?—Entre Rios, *Tweedie.*—Our specimens have no fruit, but otherwise they agree with De Candolle's character of the species.

134. (4.) Sida *candicans*, DC.—Jarillal (uncultivated places) above Mendoza, *Dr. Gillies.*

135. (5.) Sida *sessiliflora*, Hook. *in Bot. Mag. t.* 2857.—Pampas of Buenos Ayres, *Dr. Gillies.*

136. (6.) Sida (Abutilon) *ceratocarpa*, (Hook. et Arn.); caule erecto farinaceo-candicante, foliis subcordato-rotundatis sinu profundo sublobatis crenatis pannosis subtus farinaceo-candicantibus petiolum æquantibus, petiolis axillaribus elongatis folio duplo longioribus apicem versus articulatis, carpellis 8 tomentosis polyspermis oblongis in rostrum longum bipartitum attenuatis.—Cordillera of Chili, *Cuming* (*N.* 279.)—A very elegant, as well as distinct species.

137. (7.) Sida *vitifolia*, Cav.—Conception, *Messrs. Lay* and *Collie.* Chiloe, *Cuming* (*N.* 23.)

138. (8.) Sida (Abutilon) *picta*, (Gill. *mst.*); ramis herbaceis glabris, foliis longe petiolatis cordato-subrotundis 3–5-lobis glabris serratis lobis acuminatis, pedunculo axillari longo gracillimo unifloro, calyce late campanulato inflato, corolla globosa (?), petalis calyce triplo longioribus venis ramosis pictis.—Buenos Ayres, *Dr. Gillies; Tweedie.*

139. (9.) Sida (Abutilon) *Grevilleana*, (Gill. *mst.*); fruticosa, ramis petiolisque patenti-hirsutis, foliis ovatis acuminatis raro subtrilobatis grosse serratis molliter pubescentibus longe petiolatis, pedunculis axillaribus solitariis patenti-pilosis petiolo longioribus, (flore mediocri aurantiaco), carpellis 8 pubescenti-pilosis birostratis 3-spermis.—Jarillal, above Mendoza, *Dr. Gillies.*

140. (10.) Sida *mollis*, Ort.—Isle of Martin Garcia, Rio Porana, *Tweedie.*

141. (11.) Sida (Abutilon) *Arnottiana*, (Gill. *mst.*); fruticosa, dense molliter pubescenti-lanata, ramis robustis, foliis cordato-acuminatis subargute serratis sinu profundo subtus mollissimis petiolo longioribus, paniculis foliosis, pedicellis 1–3-floris, (floribus mediocribus flavis), calyce amplo corollam superante, carpellis plurimis tomentosis subdispermis.—El Aguadite, province of San Luis, *Dr. Gillies.*—This has so much the habit and general structure of *Bastardia nemoralis*, St. Hil., that except in the large calyx, and more numerous seeds, we can hardly

perceive any distinguishing character. It is all over densely woolly, and the flowers are bright yellow.

142. (12.) Sida (Abutilon) *densiflora* (Hook. et Arn.); arborea, ramis angulatis, foliis longe petiolatis cordatis coriaceis dentato-serratis 5-nerviis supra demum glabris subtus pallidis dense brevissime stellato-tomentosis nervis prominentibus, floribus (parvis) dense paniculatis subthyrsoideis, pedicellis calycibusque campanulatis 5-fidis stellato-tomentosis, petalis angustis acutis, ovario pilosissimo.—Borga in the Missions, *Baird.* Mr. Baird describes it as a "beautiful tree." Leaves 3–4 inches long, sometimes approaching to ovate. Free portion of the filaments, and the (five?) long styles reflexed.

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143. (1.) Melochia *pyramidata,* Linn.—Uraguay, *Baird.*

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144. (1.) Corchorus *argutus,* Kunth.—var. *β. australis;* St. Hil.—San Pedro in the Missions, *Tweedie.*

145. (1.) Luhea *divaricata,* Mart.—Shores of the Uraguay, *Tweedie.*

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146. (1.) Tricuspidaria *dependens,* R. et P.—Quebrada de Alvarado, near la Dormida, Chili, *Dr. Gillies.* Valparaiso, *Mr. Cruckshanks.* Chili, *Cuming* (*N.* 85.)—Nom. vernac. *Patagua.*

### CRINODENDRON. *Molina.*

*Calycis* campanulati *sepala* 5 (6, Cav.) erecta, lanceolato-pyramidata, integra, subcarnosa, basi subsaccata. *Corolla* nulla. *Torus* magnus, crassus. *Stamina* 12 (10, Cav.) e margine tori oriuntia: *filamenta* libera subulata, pilosa: *antheræ* filamentorum longitudine, lineares, pubescentes, utrinque sulcatæ, apice valvis duabus emarginatis, dehiscentes. *Pistillum* simplex: *germen* ovato-globosum, sericeo-pilosum, torum demum corrugatum insidens: *stylus* longitudine staminum subulatus, acutus, basi pilosus: *stigma* acutum. *Fructus* (Bacca?) vix maturus,

globosus, sericeo-pilosus, *cerasi* magnitudine, stylo rigido persistente terminatus. *Semina* tria (Cav.)—Arbor *Chilensis.* Folia *oblongo-lanceolata, coriaceo-membranacea, aculeato-serrata vel integerrima, plerumque opposita, brevissime petiolata, penninervia, nervis arcuatim unitis venisque reticulatis connexis, juniora subpubescentia.* Pedunculus *solitarius, elongatus, strictissimus, superne incrassatus et pubescens.* Alabastrum *pyramidatum, sericeo-pubescens.* Staminum filamenta *rubra.*

147. (1.) C. *Patagua,* Mol. *Chil.* (*ed. Angl.*) *v.* 1. *p.* 90. *et* 146. *Cav. Dis.* 5. *p.* 300. *t.* 159. (Tab. C.)—Chiloe, *Cuming* (*N.* 22.)—This very little known plant, of which but one specimen, with a single flower and young fruit, was in the collection, seems to be only known, firstly, by Molina's short and very imperfect character, above referred to, who gives it as a native of Chili; and secondly, by the figure and description given by Cavanilles, from a drawing communicated to him by Molina. This, as well as the *Tricuspidaria,* bears the vernacular name of *Patagua,* but according to Ruiz and Pavon, that appellation is given to several plants. The Natural Order appears to us to be *Elæocarpeæ,* notwithstanding the widely different floral envelope.

Tab. C.—*Fig.* 1. Flower. *Fig.* 2. Torus bearing the stamens and pistil. *Fig.* 3. Stamen. *Fig.* 4. Anther. *Fig.* 5. Pistil.

148. (1.) Aristotelia *Macqui,* L'Hérit.—Valparaiso, *Dr. Gillies; Mathews* (*N.* 257.); *Cuming* (*N.* 442.) Conception, *Messrs. Lay* and *Collie.*—This we follow Mr. Don in removing from the *Homalineæ.*

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148.* (1.) Ximenia *Americana,* Linn.—Buenos Ayres, *Dr. Gillies.*

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149. (1.) Hypericum *parviflorum,* St. Hil. Fl. Bras. Merid. *v.* 1. *p.* 333.—Uraguay, *Tweedie.* This species seems

scarcely different from H. *Pelliterianum* of the same author, *v.* 1. *p.* 334. *t.* 70.

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150. (1.) Bunchosia *multiflora* (Hook. et Arn.); erecta, glaberrima, foliis ovatis acutiusculis membranaceis nervosis reticulatis ad basin utrinque uniglandulosis, racemis elongatis multifloris diphyllis folio duplo longioribus, pedicellis medium versus bibracteatis.—In the Corrientes, *Baird.*

151. (1.) Banisteria *Bonariensis* (Hook. et Arn.); foliis cordato-subrotundis supra glabriusculis subtus glaucis sericeo-tomentosis, petiolis apice utrinque uniglandulosis, glandulis oblongis impressis ferrugineis grumosis, pedunculis axillaribus folio longioribus apice umbelliferis, radiis etiamque umbelliferis.—B. Humboldtiana? Gill. *mst.*—Hedges, woods, and orchards, about Buenos Ayres, *Tweedie; Dr. Gillies.* Allied to B. *Humboldtiana*, but still more to B. *splendens*, DC., from which last it is principally to be distinguished by the leaves that are not quite smooth above, by the different tomentum beneath, and by the flowers being umbellate, and not in dichotomous racemes.

152. (1.) Heteropteris *glabra* (Hook. et Arn.); erecta, glabra, foliis oblongo-lanceolatis obtusis supra viridibus subtus pallidis, petiolis nudis vel hinc medio uniglandulosis, glandula orbiculari, pedunculo terminali, pedicellis ultimis paucis umbellatim dispositis bracteatis.—Moist ground, Entre Rios, *Tweedie.* Of our specimens, those in flower and fruit exhibit a simple corymb or umbel, but as the upper branches occasionally become dichotomous and lose their leaves, the inflorescence then appears to be in a dichotomous panicle.

### TRICOMARIA. (Nov. Gen.) *Gillies.*

*Calyx* 5-partitus, persistens: *sepala* ovata, 4 basi extus biglandulosa, quintum eglandulosum. *Petala* 5, sepalis alternantia, disco hypogyno inserta unguiculata, ungue tenui, limbo orbiculato, crenulato, dorso sericeo: *æstivatio* imbricata. *Stamina* 10, basi monadelpha: *antheræ* subrotundæ, biloculares, extus carnosæ intus albido-membranaceæ, dehiscentes. *Germen* unicum, sericeo-pilosum, trilobum, 3-loculare: *ovula* solitaria, pendula: *styli* 3, distincti, clavati, apice truncati tubulosi. *Fructus* sericeo-pilosus, siccus, indehiscens, 3-lobus, 3-locularis, lobis dorso penicillo denso longo horizontali pilorum (atro-purpureorum) fasciculatorum instructis. *Semina* solitaria, pendula: *embryo* curvatus.—Frutex *adpresso-sericeus.* Rami *oppositi, spinescentes, ramuli ultimi oppositi, brevissimi, folia 2 vel 4 floresque paucos gerentes.* Folia *opposita, anguste lanceolata, rigida, obscure uninervia, brevissime petiolata, petiolis basi coadunatis nunc alternis, vix unciam longa lineamque lata, decidua.* Flores *terminales, aurantiaci, pedunculati, pedunculus semiunciam longus.*

153. (1.) Tricomaria *Usillo* (Hook. et Arn.)—(Tab. CI.)—Banisteria Usillo, Gill. *mst.*—Province of Mendoza, *Dr. Gillies.*—Nom. vernac. *Usillo.* It is allied to *Banisteria,* but, instead of wings to the fruit, has three remarkable and beautiful long tufts of dark purple, stiff and somewhat elastic hairs.

Tab. CI.—*Fig.* 1. Flower. *Fig.* 2. Stamens. *Fig.* 3. Anther. *Fig.* 4. Capsule (young). *Fig.* 5. The same, with the tufts of hairs removed. *Fig.* 6. The same, cut open. *Fig.* 7. Leaf:—*magnified.*

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154. (1.) Cardiospermum *velutinum* (Hook. et Arn.); totum velutino-pubescens foliaque subtus præcipue, foliis biternatis, foliolis ovatis acutis inciso-serratis, capsulis magnis obovatis apiculatis coriaceo-membranaceis pubescentibus reticulatis, tori glandulis linearibus brevibus.—Missions of Brasil, *Tweedie.* This does not appear to agree with any known species, although all of them are subject to great variation: it approaches most to C. *parviflorum,*

St. Hil. It is on every part clothed, but especially on the under-side of the leaves, with dense velvety down.

155. (1.) Serjania *sinuata*, Schum.—Uraguay, *Tweedie.*

156. (1.) Cupania *Uraguensis* (Hook. et Arn.); arborea? dioica? foliis 5–6-jugis, foliolis subalternis oblongis obtusis vel acutiusculis basi inæquali attenuatis argute serrato-dentatis utrinque glabris, paniculis subterminalibus sepalisque dense velutinis, petalis unguiculatis limbo cordato reniformi basi lobis incurvis cucullato exappendiculatis intus piloso-pubescentibus, staminibus 10, filamentis pilosis.—Uraguay, *Tweedie.* This species, notwithstanding that the petals are pubescent and have no scale upon them, surely belongs to *Cupania,* and is closely allied to C. *vernalis,* St. Hil. The glandular disk is complete, crenulated, very large, and glabrous. In place of the germen we have found nothing but a mass of hairs : hence it is probably dioecious.

157. (1.) Schmidelia *edulis?* St. Hil. Pl. Us. de Brasil. *t.* 67. —Corrientes, *Baird.*

158. (1.) Amirola *glandulosa,* Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 12.—*Llagunoa glandulosa, G. Don.*—Coquimbo, *Messrs. Lay* and *Collie.* Valparaiso, *Bridges.* Cordillera of Chili, *Cuming* (*N.* 166.) For this genus we still prefer the name *Amirola,* though posterior to *Llagùnoa,* the latter being liable to be confounded with *Lagunea :* "nomina generica simili sono exeuntia ansam probent confusionis." *Linn. Fund. Bot. N.* 228.

159. (1.) Dodonæa *Jamaicensis,* DC.—D. viscosa. *Cav. ic. v.* 4. *t.* 327.—Sand-banks of the Uraguay, *Tweedie.* This differs from the common D. *viscosa* in nothing but the narrower leaves.

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160. (1.) Cissus *Bonariensis* (Hook. et Arn.); glaberrima,

ramis angulatis, foliis pedunculatis digitatis, foliolis 5 cuneato-lanceolatis obtusiusculis mucronatis versus basin integerrimis superne rariter argute dentato-serratis, pedunculis oppositifoliis folio longioribus umbelliferis radiis bifidis corymbiferis.—Buenos Ayres and Banda Oriental, *Tweedie.*

161. (2.) Cissus *deficiens* (Hook. et Arn.); ramis subtetragonis pubescentibus, foliis breve petiolatis digitatis, foliolis 5 obovatis obtusis inciso-crenatis subtus pubescentibus, paniculis brevibus capitato-corymbosis in ramis propriis subaphyllis.—C. *striata*, Bertero *in Bulletin des Sc. Nat.* (not Ruiz and Pav.)—Valparaiso, *Cuming* (*N.* 703.)—Nom. vernac. "*Pavilla.*"—This species approaches very nearly to the C. *striata*, R. et P., but differs remarkably in the flower-bearing branches having their leaves abortive, altogether wanting opposite to the lower corymbs of flowers, and only very small ones opposite the upper.

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162. (1.) Geranium *acaule*, Willd.—Mendoza and Chili, *Dr. Gillies.*

163. (2.) Geranium *Pyrenaicum*, Linn.—Conception, *Messrs. Lay* and *Collie.*

164. (3.) Geranium *columbinum*, Linn.—Valparaiso, *Bridges; Mathews* (*N.* 184.)

165. (4.) Geranium *dissectum*, Linn.—Mendoza and Chili, *Dr. Gillies.*

166. (5.) Geranium *Robertianum*, Linn.—Valparaiso, *Bridges.* Conception, *Messrs. Lay* and *Collie; Macrae.*

167. (1.) Erodium *cicutarium*, L'Hérit.—Conception, *Messrs. Lay* and *Collie.* Baths of Collina, *Macrae.* Valparaiso, *Mr. Cruckshanks; Bridges.* Buenos Ayres and Chili, *Dr. Gillies.*

168. (2.) Erodium *moschatum*, Willd.—Buenos Ayres, *Dr. Gillies.*

169. (1.) Tropæolum *majus*, Linn.—Coquimbo and Valparaiso, *Macrae.*

170. (2.) Tropæolum *aduncum*, Sm.—*Feuillée Chil. 2. t.* 42. —Valparaiso, *Mr. Cruckshanks; Cuming* (*N.* 771.)

171. (3.) Tropæolum *ciliatum*, R. et P.—Valparaiso, *Cuming* (*N.* 773.)

172. (4.) Tropæolum *pentaphyllum*, Lam.—T. *azureum*, Miers?—Buenos Ayres, *Dr. Gillies; Tweedie.*

173. (5.) Tropæolum *tricolorum*, Sweet *Br. Fl. Gard. t.* 270. —T. *coccineum*, Miers?—Coquimbo, *Messrs. Lay* and *Collie.* Baths of Collina, *Macrae.* Valparaiso, *Mr. Cruckshanks; Bridges; Mathews* (*N.* 209.); *Cuming* (*N.* 774.)

174. (6.) Tropæolum *brachyceras*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 14.—T. *minimum*, Miers?—Valparaiso, *Mr. Cruckshanks; Bridges; Mathews* (*N.* 228.); *Cuming* (*N.* 772.)

175. (7.) Tropæolum *polyphyllum*, Cav.—T. *prostratum*, Miers.—From Los Manantiales to Puente del Inca on the east side of the Cordilleras, and about Ojos de Agua on the west side, *Mr. Cruckshanks; Dr. Gillies.* Cordillera of Chili, *Macrae; Cuming* (*N.* 316.)—*β. gracilis;* caulibus filiformibus, foliis parvis.—Maule, *Cuming* (*N.* 839.)

176. (1.) Oxalis *corniculata*, Linn.—Quillota (Chili), *Dr. Gillies.*

177. (2.) Oxalis *parvifolia*, DC.—Conception, *Macrae; Messrs. Lay* and *Collie.*

178. (3.) Oxalis *repens*, Thunb.—Fields in the Banda Oriental, *Tweedie.*

179. (4.) Oxalis *andicola* (Gill. *mst.*); caule erecto folioso basi decumbente fruticuloso, foliis numerosis carnoso-cellulosis trifoliolatis, foliolis late obcordatis profunde bifidis petiolisque piloso-hispidis laciniis divaricatis, pedunculis bibracteatis uni-bifloris demum retrofractis, sepalis lineari-oblongis obtusis petalis duplo brevioribus, stylis staminibusque hirsutis, (floribus luteis.)—*α.* calyce hirsuto.—La Sierra de Achiras, near the summit, (Province of San Luis,) and Villavicenzio, *Dr. Gillies.*—

β. calyce glabriusculo.—O. *Wallichiana*, Gill. *mst.*—El Cerro del Morro, Province of San Luis, *Dr. Gillies.*

180. (5.) Oxalis *laxa*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 13.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Cuming* (*N.* 421.); *Mathews* (*N.* 275, *in Herb. Arn.*)—β. floribus triplo majoribus.—Valparaiso, *Mathews* (*N.* 275, *in Herb. Hook.*); *Bridges.*—γ. floribus ut in β. pedunculis calycibusque minus pilosis.—Valparaiso, *Bridges; Mathews* (*N.* 276.)—The flowers are deep yellow: the hairs on the peduncle, pedicels, and calyx, very patent.

181. (6.) Oxalis *lineata* (Gill. *mst.*); suffruticosa, trunco erecto inferne foliis emarcidis vestito superne folioso, petiolis piloso-hispidis, foliolis 3 sessilibus obcordatis adpresse pubescentibus, pedunculis folio longioribus apice flores 2–3 umbellatos gerentibus piloso-hispidis, sepalis late ovatis corolla (flava purpureo-lineata) 4–5-plo brevioribus hirsuto-pilosis.—On loose débris at the foot of the ascent to El Portezuelo del Viento, Andes of Mendoza, *Dr. Gillies.*

182. (7.) Oxalis *macrorhiza* (Gill. *mst.*); radice crasso descendente subramoso, caule erecto dense folioso, petiolis elongatis gracilibus glabris, foliolis 3 sessilibus obcordatis lobis divaricatis supra glabriusculis subtus canescenti-pilosis, pedunculis brevibus unifloris glabris, sepalis ovato-oblongis obtusis glabris purpureo-marginatis corolla (violacea) triplo brevioribus.—El Cerro del Diamante, province of Mendoza, (8000 feet,) *Dr. Gillies.*

183. (8.) Oxalis *compacta* (Gill. *mst.*); radice tenui fusiformi, caulibus brevissimis cæspitosis, foliis confertis mediocriter petiolatis, petiolis glabris, foliolis 3 sessilibus leviter obcordatis plus minusve pubescenti-pilosis, pedunculis brevibus unifloris glabris, sepalis lineari-oblongis obtusis glabris margine ciliatis (siccitate sæpe pulcherrime violaceis) corolla (flava parva) duplo brevioribus.—Los Morros, Andes of Mendoza, (11,000 feet,) *Dr. Gillies.*

184. (9.) Oxalis *erythrorhiza* (Gill. *mst.*); pubescenti-pilosa, trunco fruticoso erecto inferne foliis emarcidis tecto

superne ramoso, ramis brevibus foliosis, petiolis filiformibus gracilibus elongatis, foliolis 3 sessilibus anguste cuneatis apice emarginatis, pedunculis brevibus unifloris, sepalis lanceolatis corolla (flava) duplo minoribus.—El Cerro de la Polcura, *Dr. Gillies.*—This is a very beautiful species. The lower part of the stem, or root, when broken, is of a fine red colour. The leaves, petioles, peduncle, and calyx, are all covered with short patent hairs. The petals, perhaps from drying, have a few purple lines towards the apex.

185. (10.) Oxalis *platypila* (Gill. *mst.*); trunco brevi (?) apice ramoso, ramis brevissimis foliosis, petiolis elongatis gracilibus glabris, foliolis 3 sessilibus leviter obcordatis utrinque pilosis celluloso-subcarnosis, pedunculis gracilibus unifloris petiolum subæquantibus glabris, sepalis oblongo-lanceolatis obtusiusculis glabris margine ciliatis ciliis confertis (albis) compressis spathulatis.—Eastern ascent to La Cumbre de los Andes de Chili, (11,500 feet,) *Dr. Gillies.* We have not seen the corolla of this species, but the peculiar fringe of its calyx is very unlike that of any other species we are acquainted with.

186. (11.) Oxalis *subacaulis* (Gill.); glaberrima, trunco elongato vestigiis petiolorum vetustorum tecto, foliis numerosis ex apice trunci trifoliolatis, foliolis obcordatis profunde emarginatis celluloso-subcarnosis, pedunculis 1–2-floris folium æquantibus, sepalis oblongo-lanceolatis obtusiusculis corolla (flava) plus duplo brevioribus.—Villavicenzio, Andes of Mendoza, *Dr. Gillies.*—Dr. Gillies found two states of this plant, the former with one, the latter with two flowers on the peduncle. As they were from nearly the same situation, we do not think it necessary to note them as distinct varieties.

187. (12.) Oxalis *geminata* (Hook. et Arn.); trunco elongato inferne squamoso decumbente, foliolis 3 sessilibus obcordatis profunde bifidis pilosiusculis obsolete trinerviis vix carnosis, pedunculis folia duplo excedentibus racemos duos corymbosos multifloros bracteatos geminatos gerentibus, sepalis oblongis obtusis glabris capsula longioribus

corolla (intense purpurea) subduplo brevioribus.—Andes of Chili, *Cuming* (*N.* 172.) Villavicenzio, (5000 feet,) and El Cerro de San Pedro Nolasco, Andes of Mendoza and Chili, *Dr. Gillies.*—The specimens from Dr. Gillies are smaller and less perfect than those from Cuming; but we see no other difference.

188. (13.) Oxalis *tortuosa,* Lindl. *in Bot. Reg. t.* 1249.—O. *glomerata,* Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 13.—Valparaiso, *Macrae; Cuming* (*N.* 762.) Coquimbo, *Messrs. Lay* and *Collie.*

189. (14.) Oxalis *carnosa,* Molina.—*Bot. Mag. t.* 2866.—Valparaiso, *Mr. Cruckshanks.* Conception, *Messrs. Lay* and *Collie.*

190. (15.) Oxalis *rosea,* Jacq.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Mr. Cruckshanks; Bridges; Cuming* (*N.* 89.)

191. (16.) Oxalis *violacea,* Linn.—Sassia tinctoria, Mol.?—Buenos Ayres, *Dr. Gillies.* Uraguay, *Tweedie.* Valparaiso, *Cuming* (*N.* 340.)—Dr. Gillies' specimens have only two flowers on the peduncle; those from Tweedie, from three to five or six. Perhaps the eastern species is O. *articulata,* Sav., of which Savigny says the flowers are reddish, drying to a purple colour, and not yellowish as described by De Candolle; but we cannot see any difference in character between it and O. *violacea.*

192. (17.) Oxalis *bipunctata,* Graham *in Bot. Mag. t.* 2781. —O. *urbica,* St. Hil. Fl. Bras. Merid. v. 1. p. 126.—O. *violacea,* Sav. (non Linn. nec Jacq. sec. St. Hil.)—Buenos Ayres, *Dr. Gillies.*

193. (18.) Oxalis *lobata,* Sims. *in Bot. Mag. t.* 2386.—O. *perdicaria,* Bertero *mst.*—Sassia perdicaria, Mol. (sec. Bertero.)—Sandy plains at Valparaiso, *Bertero.* On the plains of Maypu, and between Talca and San Fernando, Chili, (1200 feet,) *Dr. Gillies.* Nom. vernac. *Flor de Perdrix.*

194. (19.) Oxalis *autumnalis,* St. Hil. Fl. Bras. Merid. v. 1. p. 128.—Very plentiful in dry fields, Buenos Ayres, *Tweedie.* The O. *tenera,* Spr. seems allied to it, but here

the bulbs are covered with brown scales and interwoven fibres.

195. (20.) Oxalis *Acetosella,*? Linn.—Buenos Ayres to the Pampas, *Dr. Gillies.*—The specimens are exceedingly imperfect and destitute of root. In all probability the latter is tuberous, and the plant more allied to the last species: indeed the flowers appear of a pale yellow colour, and the sepals are marked longitudinally with a central purple line.

196. (21.) Oxalis *adenophylla* (Gill. *mst.*); glabra, caudice subnullo apice valde folioso, petiolis elongatis gracilibus, foliolis sub-12 sessilibus glabriusculis obcordatis lobis divergentibus celluloso-carnosulis basi attenuatis et sæpe violaceo-glandulosis (?) pedunculis petiolum subæquantibus bifloris, pedicellis fructiferis incurvis, sepalis latitudine inæqualibus corolla (violacea) 6-plo brevioribus demum ampliatis fructumque subæquantibus.—El Cerro de la Polcura, *Dr. Gillies.*—This is a very handsome species, and most resembles the O. *enneaphylla,* Cav. We dare not assert, from the dried plant, that the appearance at the base of the leaflets is caused by the glands from which the specific name seems to have been derived.

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197. (1.) Tribulus *lanuginosus,* Linn.—Uncultivated places about Mendoza, *Dr. Gillies.*

198. (1.) Fagonia *Chilensis* (Hook. et Arn.); ramis diffusis repetitim dichotomis, foliis trifoliolatis, foliolis obovato-lanceolatis mucronatis marginibus aculeato-asperis, stipulis spinescentibus petiolo duplo triplove brevioribus.—Coquimbo, *Cuming* (*N.* 907.)

199. (1.) Larrea *nitida,* Cav.—Defile or Quebrada leading from Mendoza to Villavicenzio, to Punta de los Vacas, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 213, absque flore.)—Nom. vernac. *Jarillo,*—a name indeed applied to the whole genus. The present is said by Dr. Gillies

to be injurious to such mules and horses as eat of it: while Mr. Cuming observes, that it is esteemed in the Cordilleras as excellent for bruises and broken limbs.

200. (2.) Larrea *divaricata*, Cav.—Most abundant in the Cordilleras of Mendoza, *Dr. Gillies.*—Used for firewood, and being resinous and consuming rapidly, it is employed for heating ovens.

201. (3.) Larrea *cuneifolia*, Cav.—Mendoza, *Dr. Gillies.*

202. (1.) Zygophyllum *Retama* (Gill. *mst.*); caule fruticoso ramoso, ramis teretibus, foliis e gemmis oriuntibus valde caducis pinnatis, foliis 2-jugis oblongis minutis, pedunculis aggregatis simplicibus, petalis calyci æqualibus, squamis staminiferis majusculis oblongis apice ciliato-laceris, floribus majusculis nutantibus, fructibus glabris pentapteris, semine abortu solitario lineari-oblongo curvato compresso scabro.—From Mendoza to San Juan, (2000–3000 feet,) *Dr. Gillies.*—Nom. vernac. *Retama.*—The flowers resemble in size and appearance those of some of the larger species of *Cassia.* The peduncles spring from the same buds as the leaves, which latter are so remarkably small (the leaflets being not half a line long) and deciduous, as to render them scarcely perceptible. This is, we believe, *Cupania Andina*, Miers.

### PLECTROCARPA. (Gill. *mst.*)

*Calyx* profunde 5-partitus: sepala subinæqualia. *Petala* 5, sepalis alterna, obovata, in unguem attenuata, calyce paullo longiora (aurea, venis sex notata.) *Stamina* 9, æqualia; summum sepalo oppositum, squamæ bifidæ recurvæ, magnæ, carnosæ, duplicato-laminatæ interne adnatum, filamento vix squama longiore; secundum octavumque squamis bipartitis, latere superiore majore, adnata, filamentis squama paullo longioribus; cætera basi squamula æqualiter bipartita minuta instructa: *antheræ* biloculares. *Germen* liberum, dense pilosum, pilis adpressis erectis, toro tenui impositum, ovatum, 5-sul-

catum, 5-loculare, loculis bi-ovulatis; *ovula* ex apice anguli interni suspensa. *Stylus* brevis, 5-gonus, apice acutus, vix pilis germinis longior. *Fructus* villosus, capsularis, subulatus, 5-angulatus, indehiscens; carpellis dorso infra medium calcare subulato longo deflexo; endocarpium a sarcocarpio non solubile marginibus introflexis a placenta centrali 5-angulari demum solutis. *Semen* in fructu solitarium, cæteris (an semper?) abortientibus, pendulum, compressum. *Albumen* tenue carnosum. *Embryo* rectus: *cotyledones* planæ, foliaceæ, ovales; *radicula* cotyledonibus brevior supera.—Frutex *procumbens? ramosus;* rami *nodosi, striati, grisei, spinosi: spinis (ramis abortivis) ex nodis solitariis ad basin fere 4-partitis; segmentis subulatis, rectis, validis, subæqualibus, horizontaliter patentibus, cum mucronula brevi (segmento quinto abortivo?) supra inter bases.* Folia *ad gemmos infra spinas fasciculata impari-pinnata: foliola 4–5-juga, oblonga, basi hinc lobata, sericeo-pubescentia, terminali minore.* Flores *inter folia:* pedunculus *brevis, simplex, villosus.*

203. (1.) P. *tetracantha* (Gill. *mst.*)—On "travesia" or uncultivated plains near Los Cerrillos de San Juan, province of San Juan, (2000–2500 feet,) *Dr. Gillies.*—This is a very remarkable plant. The flowers, leaves, spines, and also branches, are all inclined to one side, and hence we presume the shrub to have been prostrate. It is difficult to judge whether the spines ought not to be viewed as four horizontal spines, set round on an exceedingly short abortive branch, which is terminated by a little point or mucro between the spines. The subulate fruit, each of the projecting angles, or constituent carpels of which is furnished with a singular spur, villous as well as the fruit, and bent slightly downwards, is totally unlike any thing else we know. Only one ovule appears to be perfected: the remains of the others may, however, be traced in the advanced fruit. The genus obviously comes next to *Porlieria* and *Larrea.*

204. (1.) Porlieria *hygrometrica,* R. et P.—Cordillera of Chili, *Cuming* (*N.* 274.); *Dr. Gillies.* El Aguadita, province of San Luis, (3000 feet,) *Dr. Gillies.*—Nom. vernac. *Guayacan.* The wood is used for making spoons, combs, &c.

205. (1.) Ruta *graveolens,* Linn.—Conception, *Messrs. Lay* and *Collie.*—Probably cultivated.

206. (1.) Zanthoxylon *Mayu* (Bertero *in Ann. Sc. Nat. t.* 21. *p.* 345.); inerme, glaberrimum, foliis impari-pinnatis, foliolis 7-jugis elliptico-lanceolatis obtusis subcoriaceis nitidis crenatis penninerviis vix glandulosis apice emarginatis, rachi alata, paniculis laxis brevibus, fructibus tuberculatis.—*Fagus lutea,* Molina, *v.* 1. *p.* 137. (ed. Angl.)—Juan Fernandez, *Bertero; Cuming* (*N.* 1340.)

207. (2.) Zanthoxylon *Coco* (Gill. *mst.*); fruticosum, inerme, foliis impari-pinnatis, foliolis subtrijugis lanceolatis acuminatis submembranaceis opacis serratis vix nervosis pellucido-punctatis, rachi filiformi nuda, panicula foliis subbreviore.—Los Achiras, province of San Luis, *Dr. Gillies.*—Nom. vernac. *Coco.*

BRIDGESIA. Hook. et Arn. (non Hook. *in Bot. Misc.*)

*Perianthium* simplex, persistens, e foliolis 5 rarius 6 ovalibus, membranaceis, concavis, patentibus, inferne bracteis 3 suffultum. *Stamina* 10: *filamenta* subulata, glabra, longe exserta, basi in annulum brevissimum gynophoro paullulum remotum et cum basi foliolis perianthii unitum, inserta: *antheræ* oblongæ, dorso insertæ, biloculares, loculis subappositis, longitudinaliter dehiscentibus. *Pistilla* 5–7 (1, 2, vel 3 nunc abortientia) basi per gynophorum breve connexa, erecta. *Germen* obovatum, lateribus compressum, obtusum, uniloculare: *ovulum* solitarium, ad basin loculi adscendens. *Stylus* lateralis, filiformi-subulatus, antice præcipue pubescens: *stigma* minutum, obtusum, parum depressum.—Frutex *habitu quodammodo Loranthi, undique glaberrimus.* Folia *alterna,* *ovata, breve petiolata, fere semper secunda, carnoso-coriacea, integerrima, costata, enervosa, impunctata.* Stipulæ *nullæ.* Racemi *axillares, densi, spicati, multiflori.* Pedicelli *breves, crassi, bi-tri-bracteati ; bracteis membranaceis, sensim, ut videtur, in perianthii foliola transeuntibus.*

208. (1.) B. *spicata* (Hook. et Arn.)—(Tab. CII.)—Galvezia spicata, Bertero *in Bull. des Sc. Nat.* (absque descript.)—Valparaiso, *Bridges; Mathews* (*N.* 244.); *Cuming* (*N.* 349.)—This remarkable plant belongs to the *Rutaceæ.* It was first known to us through Mr. Bridges' specimens, after whom we name the genus; the *Bridgesia* of this work, *v.* 2. *p.* 222. *t.* xcii, being the *Polyachyrus* of Lagasca, according to Mr. Don. Mr. Mathews sent it marked *Galvezia,* a name he is very likely to have derived from Mr. Bertero; and this plant has in its fructification many points in common with that genus, which, combined with the fact of there being a new species mentioned by Bertero as above, have induced us to consider that as a synonym, and to adopt his trivial name. From *Galvezia* it differs, however, entirely in habit and inflorescence; in the constantly simple floral covering, by which also it seems to depart from all the other known *Rutaceæ ;* in the number of the parts of the flower; in the free ovaries, distinct styles, and the solitary ovules. We should observe, that in the *Bulletin des Sc. Nat.* above quoted, it is remarked that the *Galvezia spicata* of Bertero is probably the "*Myrtus parasylitica* (not *parasitica,* although the plant be described as parasitical,) *marifolio, vulgo Hitigu* of Feuillée Chil. *v.* 3. *p.* 43. *t.* 34;" but this is evidently a mistake; so experienced a botanist as Bertero never could have referred to it as a *Galvezia.*

Tab. CII.—*Fig.* 1. Flower with its pedicel and bracteas. *Fig.* 2. Anther. *Fig.* 3. Pistils and short annulus of the stamens. *Fig.* 4. Two of the pistils with their receptacle. *Fig.* 5. A germen cut open. *Fig.* 6. Ovules:—*magnified.*

### GUINDILIA. Gill. *mst.*

*Sepala* oblonga, extus pubescentia. *Petala* . . . . *Stamina* libera. *Germen* 3-lobum, 3-loculare, pubescens, toro parvo insidens: *ovula* solitaria, e basi loculi ex angulo interno adscendentia. *Stylus* unicus: *stigma* 3-lobum. *Fructus* 3-carpellatus, 3-locularis, crasse crustaceus: loculi subglobosi (duobus sæpius abortientibus) indehiscentes: endocarpium a sarcocarpio non solubile. *Semen* in loculis solitarium globosum, adscendens, testa crustacea tenui fragili. *Albumen* 0. *Cotyledones* magni, crassi, cartilaginei, verticaliter hippocrepice curvati radiculam brevem transversum apice sursum spectantem fere involventes.—Frutex *ramosus, foliosus;* rami *oppositi, teretes, cicatricibus foliorum notati.* Folia *opposita, unciam longa, ovata, vix acuta, ad basin in petiolum brevissimum semiamplexicaulem subiter attenuata, integerrima, trinervia, glabra, carnoso-coriacea, pellucido-punctata.* Stipulæ *nullæ.* Pedunculi *axillares, pubescentes.* (Flores *imperfecti tantum nobis noti.*)

209. (1.) Guindilia *trinervis* (Gill. *mst.*)—Los Manantiales, Andes of Mendoza, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 290.)—The flowers, we regret to say, are almost unknown to us, having only observed one sepal among the remains of the calyx and a few withered stamens, which prevents us from introducing their respective numbers into the generic character. It appears to us to belong to the groupe of *Rutaceæ,* as extended by Ad. de Jussieu, but it does not agree with any of the sub-orders at present established. Although the radicle be transverse or horizontal, yet the point of it is rather inclined upwards, so that it might be almost termed superior. By the cotyledons it seems allied, at first sight, to the *Cusparieæ,* but they exhibit in reality a different structure, being here situated in a plane at right angles to that of the radicle, round which, notwithstanding, they are bent like a horse-shoe; besides, the endocarp does not separate from the sarcocarp, nor become

two-valved. With *Zygophylleæ* and some *Zanthoxyleæ* it agrees in the opposite leaves, but the shape of the embryo, and absence of albumen, oppose its union with them.

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210. (1.) Coriaria *ruscifolia*, Linn.—Conception, *Messrs. Lay* and *Collie; Cuming* (*N.* 146.)

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211. (1.) Maytenus *Chilensis*, DC.—Valparaiso, *Dr. Gillies; Mr. Cruckshanks; Bridges; Cuming* (*N.* 608.); *Messrs. Lay* and *Collie.*—Molina describes his M. *Boaria* to have 2 stamens and one seed, which has led to some doubt of its being the same as the present species: but there seems to be only one Chilian species known by the name of *Mayten.* We possess both the broad and narrow-leaved states mentioned by De Candolle, which pass, however, into each other.

212. (1.) Celastrus *quadrangulatus*, Schrad.—DC.—*Ilex acutangula*, Nees et Mart.—Uraguay, *Baird.* Entre Rios, *Tweedie.*

213. (2.) Celastrus? *rhombifolius* (Hook. et Arn.); foliis alternis exacte rhomboideis utrinque angulo spinuloso-mucronato apice nervo excurrente spinosis coriaceis supra nitidis integerrimis basi in petiolum perbrevem attenuatis, floribus axillaribus glomeratis subsessilibus, petalis calyce extus pubescente minoribus oblongis carnosis (æruginosis).—*Ilex cuneifolia*, β.? *Bonariensis*, *Lam.*—*DC.*—San Luis, *Dr. Gillies.* Dry banks of the Uraguay, *Tweedie.*—The plant of Lamark is evidently the same as ours, although that author, probably from an imperfect specimen, asserts that the flowers are solitary. The calyx has a valvular æstivation, it is 5-cleft, the base inside being covered with a smooth fleshy disk, from the margins of which arise the petals, alternate with, and scarcely so long as the calycine segments. They are thick and fleshy, and of a fine bright-green colour. The stamens are inserted on the calycine segments about their middle: filaments very short: anthers bilocular.

The germen is immersed in the disk, bilocular, with one ovule (in one instance there appeared two) suspended from the apex of each cell. The style is single and nearly the length of the petals: stigma concave, 2-lobed, or shortly bilamellate. From this analysis our plant cannot be an *Ilex:* it agrees in more points with *Celastrus,* although the insertion of the stamens and pendulous ovules militate against, not only its belonging to that genus, but even to the order *Celastrineæ,* as at present characterised: to that order, however, it certainly does belong, and may form a new genus, (IODINA, Hook. et Arn.)

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214. (1.) Sageretia *trinervis* (Gill. *mst.*); glabra, ramis teretiusculis lateralibus spinescentibus, foliis oppositis oblongo-ellipticis obtusis apiculatis basi in petiolum brevem decurrentibus integerrimis trinerviis basi bistipulatis, pedunculis unifloris axillaribus aggregatis folio multo brevioribus.—Valleys in the Andes of Mendoza, and near La Guardia in those of Chili, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 242.)—This agrees in the inflorescence with *Sageretia,* particularly in the disk of the flowers. The branches, which are often spinescent, are opposite as well as the leaves: the latter are from ½ to ¾ of an inch long. Fruit subglobose, 3-lobed, nearly half immersed in the disk that lines the persistent base of the calyx.

215. (1.) Condalia *microphylla,* Cav.—Mendoza, *Dr. Gillies.*

216. (1.) Discaria *Americana,* Gill. et Hook. *in Bot. Misc. v.* 1. *p.* 156. *t.* 44. *D.*—Near Buenos Ayres, and mountains of San Luis and Cordova, *Dr. Gillies.* Clay banks, Buenos Ayres, *Tweedie.*

217. (1.) Colletia *cruciata,* Gill. et Hook. *in Bot. Misc. v.* 1. *p.* 152. *t.* 43.—*Condalia paradoxa,* Spreng.—Maldonado, Rio de la Plata, *Dr. Gillies.*

218. (2.) Colletia *spinosa*, Lam. *Bot. Misc. v.* 1. *p.* 153. *t.* 44. *A.*—Andes of Mendoza and Chili, at an elevation of from 5000 to 7000 feet: and at Curico in Chili, *Dr. Gillies.* Valparaiso, *Bridges*; *Cuming* (*N.* 705.) Conception, *Messrs. Lay* and *Collie.*

219. (3.) Colletia *ferox*, Gill. et Hook. *Bot. Misc. l. c. t.* 44. *B.*—Valleys of the Andes of Mendoza, at an elevation of from 2600 to 5000 feet, *Dr. Gillies.*

220. (4.) Colletia *ulicina*, Gill. et Hook. *Bot. Misc. v.* 1. *p.* 155. *t.* 44. *C.*—Base of the Cordillera of Chili, at an elevation of 3000 feet, *Dr. Gillies.*

221. (5.) Colletia *longispina* (Hook. et Arn.); spinis remotis patentibus validuisculis, foliis paucis in ramulos juniores oblongo-linearibus serratis, floribus glomeratis, calycibus breve cylindraceis, staminibus inclusis.—β. *foliosa*; spinis brevioribus, foliis numerosioribus.—α. and β. Banda Oriental, *Baird.*

222. (6.) Colletia *spartioides* (Bertero *in Ann. des Sc. Nat. v.* 21. *p.* 347.); spinis ramealibus numerosis subgracilibus longis flaccidiusculis flexuosis striatis intricatis, foliis paucis oblongis inferne attenuatis serratis, floribus subglomeratis (albido-roseis), calycibus breve cylindraceis, staminibus subexsertis.—Juan Fernandez, *Bertero.*—M. Bertero states it to be a shrub or small tree, about 10 or 12 feet high.

223. (7.) Colletia *serratifolia*, Vent.—β. *foliosa*; foliis numerosis majoribus.—β. Valparaiso, *Cuming* (*N.* 427 and 637.)

224. (1.) Retanilla *Ephedra*, Brongn.—Cordillera of Chili, *Dr. Gillies.* Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Cuming* (*N.* 704.)—To this genus Brongniart has also referred the *Colletia obcordata*, Vent.: but that has a depressed 3-coccous membranaceous fruit, quite different from the hard woody one of the present species.

225. (2.) Retanilla *stricta* (Hook. et Arn.); glabra, ramis strictis spinis valde elongatis erectis strictis aphyllis racemos subelongatos gerentibus, calycibus campanulatis glabriusculis.—Valparaiso, *Cuming* (*N.* 402.)—Of this

we possess no fruit, but its habit is that of the preceding species.

226. (3.) Retanilla *trinervia* (Hook. et Arn.); spinosa, foliosa, glabra, foliis ellipticis crenatis 3-nerviis utrinque viridibus, nervis pellucidis, ramis floriferis nonnunquam aphyllis, calycibus urceolatis subpubescentibus pistillo longioribus, capsula nucumentacea.—Trevoa, *Miers mst.*—Trevoa trinervis, *Gill. et Hook. in Bot. Misc. v.* 1. *p.* 159.—El Peral (Chili), *Dr. Gillies.* Valparaiso, *Bridges; Mathews* (*N.* 162.); *Cuming* (*N.* 732 and 641.)—Nom. vernac. *Trebu* or *Trevo.*—Although the flower agrees with that of *Talguenea*, yet a specimen in fruit from Mr. Cuming, which accompanies the one in flower, shows an exceedingly hard fruit like that of R. *Ephedra*, so that we have found it necessary to remove it here.

227. (1.) Talguenea *costata*, Miers *Chili, v.* 2. *p.* 529.—Trevoa quinquenervia, *Gill. et Hook. in Bot. Misc. v.* 1. *p.* 158. *t.* 45. *B.*—Valleys of the Andes of Chili, *Dr. Gillies.*—Nom. vernac. *Talguen.*—It is of the "Talguen" that Miers constituted his genus, and his name we therefore adopt, particularly as the "*Trebu*" or "*Trevo,*" for which alone he proposed his genus *Trevoa*, is now a species of *Retanilla.*

228. (1.) Gouania *ulmifolia* (Hook. et Arn.); foliis cordato-ovatis grosse crenato-serratis utrinque glabris rugosis subtus nervis venisque transversalibus prominentibus, petiolo pedunculisque pubescentibus, racemis simplicibus axillaribus terminalibusque folio subduplo longioribus, floribus delapsis paniculatim dispositis, fructûs alis crassis semiorbicularibus.—Climbing on high trees by the Uraguay, *Tweedie.*—This species is closely allied to G. *Domingensis*, with which it agrees in the shape and structure of the fruit: the leaves, however, appear quite different in the two.

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229. (1.) Casearia *oblongifolia*, St. Hil. Fl. Bras. Merid. *v.* 2.

*p.* 234.?—Samyda serrulata, *Mart. in Herb. Hook.* (*non Linn.*)—La Cruz in the Corientes, *Baird.*

### LITHREA. Miers.

*Flores* dioici.—MASC. *Calyx* parvus, 5-partitus, persistens. *Petala* 5, inter calycem et discum inserta, sessilia, oblonga, æqualia, demum patentia, crassiuscula, uninervia, venis transversalibus subramosis: *æstivatio* valvata. *Torus* discoideus, pateriformis. *Stamina* 10, sub disco inserta: *filamenta* brevia: *antheræ* biloculares, interne secundum longitudinem dehiscentes. *Pistillum* abortivum.—FŒM: *Calyx* et *Corolla* ut in mare. *Stamina* abortiva. *Germen* subglobosum, liberum, disco carnoso insertum: *ovulum* solitarium, e basi loculi adscendens: *stylus* brevis, crassus: *stigma* trifidum, lobis brevibus oblongis patentibus. *Fructus* drupaceus, unilocularis: epicarpium tenue, fragile: sarcocarpium parcum carnosum: endocarpium osseum, sphæricum, compressum. *Semen* solitarium, pendulum: *podospermum* e basi loculi ortum. *Albumen* nullum. *Embryo* arcuatus: *cotyledones radiculaque* inferi.—Frutex *valde ramosus;* rami *angulati.* Folia *alterna, sparsa, exstipulata,* 2–3 *uncias longa, elliptica, coriacea, margine cartilagineo, petiolata.* Racemi *paniculati, axillares et terminales.* Pedicelli *basi bracteati, versus basin articulati.*

230. (1.) L. *caustica* (Hook. et Arn.)—L. *venenosa,* Miers *Chil. v.* 2. *p.* 529.—Laurus caustica, Molina.—Rhus (?) caustica, *Hook. et Arn. in Bot. of Beech. Voy. v.* 1. *p.* 15. *t.* 7.—Mauria simplicifolia, *Humb. et Kunth?*—Llithi, Feuill. *Chil. v.* 3. *t.* 23. (*fig. ad dextr.*)—*α.* foliis glabris. Valparaiso, *Dr. Gillies; Mr. Cruckshanks; Bridges; Cuming* (*N.* 647.) Conception, *Messrs. Lay* and *Collie.* —*β.* foliis subtus pubescenti-hirsutis.—Valparaiso, *Mr. Cruckshanks; Bridges; Mathews* (*N.* 234.)—This genus is readily distinguished from the other allied *Terebinthaceæ* by the æstivation, independent of other characters. (It is probable that *Mauria simplicifolia,* Kunth, is the

same with our plant, and that the character of the flower of that genus in the Nova Gen. et Species has been taken from the *M. heterophylla.*)

231. (1.) Duvaua *dependens*, DC.—α. fructu minore, foliis cuneato-oblongis. Amyris polygama, *Cav.*—Near Rio Colorado (Chili), *Mr. Cruckshanks.* Baths of Collina, *Macrae.* Valparaiso, *Cuming* (*N.* 368.) San Gabril, in Valle del Maypu, (4000–5000 feet,) in Valle del Tuigrireca, from Villavicenzio to Mendoza, *Dr. Gillies.*—β. fructu majore, foliis cuneato-oblongis. D. inebrians, *Gill. mst.*—Banks of Rio Solado, Andes of Mendoza.—The Pehuenco Indians ferment the fruit, and form an intoxicating liquor from it.—*Dr. Gillies.* Valparaiso, *Messrs. Lay* and *Collie.*—γ. fructu majore, foliis subellipticis majoribus. D. latifolia, *Gill. mst.*—Los Ojos de Agua, Andes of Chili, (3600 feet,) *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 347.); *Mathews* (*N.* 320.)—Perhaps β. and γ. may together form a distinct species: their fruit is double the size of that of α. We have also another state, D. *cuneata*, Gill. *mst.*, with leaves short and broadly cuneato-obovate, which, as we have not seen the fruit, we hesitate about describing. All the varieties vary exceedingly in the size and form of their leaves, which are either entire or crenato-serrate almost on the same individual. The racemes also vary in shape: the quaternary or quinary arrangement of the floral coverings affords here no character. The pedicels have an articulation about the middle, and at their base a very minute bractea. The petals are obovato-oblong, thin and delicate, except at the back, where there is one long strong vein, and two shorter and fainter: the æstivation is imbricated. The margin of the thick fleshy disk is divided into as many lobes (8 or 10) as there are stamens, a portion or tooth projecting between each filament. There is one short style with three globose stigmas, as Cavanilles describes, and not three styles as mentioned by Kunth. The ovary is suspended from one side near the summit of the cell: the seed is also suspended, slightly

reniform: cotyledons large and fleshy: radicle superior, short, (not long, as stated by Kunth,) bent suddenly downwards and closely applied to the edge of the cotyledons. Both *Schinus Huygan* and *S. Molle* of Molina (not Linn.) probably belong to some of the varieties.

232. (1.) Schinus *terebinthifolius*, Linn.—Missions of Brazil, *Baird.*

233. (2.) Schinus? *ternifolius* (Gill. *mst*); arborescens, foliis ternatis longe petiolatis lanceolatis integerrimis coriaceis glabris supra nitidis parallelim venosis.—El Aguadita (Prov. of San Luis), *Dr. Gillies.*—Nom. vernac. *Molle dulce.*—As this is destitute of flower and fruit, we are doubtful of its genus: but no *Rhus* having been found in South America, we think it safer to refer it to *Schinus.*

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234. (1.) Sophora *macrocarpa*, Sm. in Rees' Cycl.—Edwardsia Chilensis *Miers.*—Valparaiso, *Mr. Cruckshanks; Cuming* (*N.* 717.) Prov. of Maule, *Cuming* (*N.* 836.)—This is the "*Mayu*" of the natives and of Molina.

235. (1.) Edwardsia *microphylla*, Salisb.—"Sophora macrocarpa, Sm.?" *Bertero in Ann. des Sc. Nat. v.* 21. *p.* 347.—Juan Fernandez, *Bertero.* Prov. of Maule, *Cuming* (*N.* 828.)—Although we have seen no flowers, and only the young fruit of this plant, yet, on a comparison of the latter, and of the foliage, with those of *E. microphylla*, we can hardly doubt of their identity. This is called "*Guayacan,*" according to Bertero, and, as he says, it differs from the *Mayu* (*Sophora macrocarpa*) of Chili, in the shape of the leaves, and the stem being of considerable size (12–20 feet high), while that of the last is a shrub. We may add that the fruit is winged.

236. (1.) Crotalaria *retusa*, Linn.—South Brazil, *Tweedie.*

237. (2.) Crotalaria *Brownei*, Bert.?—Shores of the Uraguay, *Tweedie.* Sandy banks at Arroya del Sauce, Banda

Orientale, *Dr. Gillies.*—Our specimens are only in flower and may probably prove to be a distinct species.

238. (3.) Crotalaria *incana*, Linn.—Southern Brazil, *Tweedie.*

239. (1.) Genista *elegans* (Gill. *mst.*); foliis tripartitis segmentis elongato-subulatis canaliculatis (stipulisque lanceolatis basi inter se coadunatis) acutissimis pungentibus spinescentibus adpresso-argenteo-sericeis, leguminibus lineari-lanceolatis sericeis 5–6-spermis, valvis demum spiraliter tortis glabriusculis. (Tab. CIII.)—Valleys of the Andes of Mendoza, *Dr. Gillies.*—This, the three following, and, in all probability, the *G. Desiderata*, DC. belong unquestionably to the genus *Genista*, as will be seen by the figure which accompanies the present individual.

Tab. CIII.—*Fig.* 1. Leaf. *Fig.* 2. Flower. *Fig.* 3. Stamen:—*magnified.* *Fig.* 4. Legumen:—*natural size.*

240. (2.) Genista *rigida* (Gill. *mst.*); foliis tripartitis, segmentis brevi-subulatis striatis (stipulisque ovatis lato-subulatisqve basi inter se coadunatis) acutissimis pungentibus spinescentibus junioribus adpresso-sericeis, leguminibus ovatis in stylum acuminatis sericeo-lanatis monospermis.—Between El Pretil and Covraco (S. of Prov. of Mendoza), *Dr. Gillies.*

241. (3.) Genista *Cumingii* (Hook. et Arn.); foliis tripartitis segmentis (stipulisque subsimilibus basi inter se coadunatis) lato-linearibus striatis acutis spinescentibus glabris, leguminibus oblique ovalibus subfalcatis compressis 3-spermis, calyce petalisque omnibus extus sericeis, vexillo alis longiore.—Cordillera of Chili, *Cuming* (*N.* 228.) Baths of Collina, *Macrae.*—This has much smaller leaves than the two preceding, and the stipules are nearly equal in size and shape to the segments.

242. (4.) Genista *andicola* (Gill. *mst.*); foliis simplicibus! brevi-subulatis striatis (stipulisque consimilibus inter se basi coadunatis) spinescentibus glabris, leguminibus oblongis compressis valvis demum spiraliter tortis calycibusque subsericeis.—La Cuesta del Inga, and La Quebrada del Fray Carlos, Andes of Chili, *Dr. Gillies.*—Of

this we have seen no flower, but the foliage is very remarkable: the two stipules are precisely of the same size and shape as the simple leaf, and all the three are combined by their bases, and prolonged into a sheath, so as to resemble a tripartite leaf with a sheathing base.

243. (1.) Medicago *sativa,* Linn.—Cultivated at Mendoza, *Dr. Gillies.*

244. (2.) Medicago *minima,* Lam.—Near El Salto de San Isedro, mountains of Mendoza, *Dr. Gillies.*

245. (3.) Medicago *denticulata,* Willd.—Benth.—Valparaiso, *Mathews* (*N.* 166.) Conception, *Messrs. Lay* and *Collie.* Buenos Ayres, *Dr. Gillies; Tweedie.* Mountains of Mendoza, *Dr. Gillies.*—Mr. Tweedie states this to be the common "*Clover*" of the plains of Buenos Ayres.

246. (1.) Melilotus *leucantha,* Koch.—Buenos Ayres (cult.), *Tweedie.*

247. (2.) Melilotus *parviflora,* Desf.—Conception, *Messrs. Lay* and *Collie.* Buenos Ayres, San Juan, and Mendoza, *Dr. Gillies.* Juan Fernandez, *Dr. Scouler.* Valparaiso, *Mathews* (*N.* 165.)

248. (1.) Trifolium *obcordatum,* Desv.—β.? floribus duplo majoribus. T. grandiflorum, *Hook. et Arn. in Bot. Beech. Voy. v.* 1. *p.* 16.—α. Banda Orientale, *Baird.* Buenos Ayres, *Dr. Gillies.*—β. Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Bridges; Mathews* (*N.* 287.)—Mr. Mathews' specimens have the flowers of an intermediate size.

249. (2.) Trifolium *Macræi, n. sp.;* patenti-pilosum, caulibus procumbentibus diffusis, foliis anguste obovatis denticulatis, stipulis lanceolatis acuminatis integerrimis, capitulis sessilibus rarius breve pedunculatis hemisphærico-globosis multifloris, calycibus piloso-sericeis dentibus longis setaceis rectis carina acuminata paulo brevioribus.—Baths of Collina, *Macrae.* Sandy hills, near Valparaiso, *Mathews* (*N.* 174.) Valparaiso, *Cuming* (*N.* 749.)

250. (3.) Trifolium *Chilense*, Hook. et Arn. *l. c. v.* 1. *p.* 16.—Conception, *Messrs. Lay* and *Collie; Cuming* (*N.* 115.)

251. (4.) Trifolium *physanthum* (Hook. et Arn.); glabrum, suberectum, caule brevi simplici, foliolis anguste obovatis spinuloso-dentatis, stipulis ovatis apice spinuloso-laciniatis, involucro monophyllo lobato spinuloso-denticulato reticulato capitulum hemisphæricum vix excedente, calycibus obovatis inflatis membranaceis superne piloso-lanatis dentibus setaceis simplicibus tripartitisque corolla tubo inflato longioribus, legumine obovato dispermo.—Valparaiso, *Cuming* (*N.* 748.)—Most allied, perhaps, to *T. cyathiferum*, Lindl. (*Hook. Fl. Bor. Am. v.* 1. *t.* 50), but it has much shorter and simple stems, different stipules, dentato-spinose (not ciliated) teeth to the involucre, and a very different calyx. The bristles of the teeth are brown, pale at the extremities.

252. (5.) Trifolium *involucratum*, Willd.—Valparaiso, *Cuming* (*N.* 750.)—Our specimens precisely accord with those from the North-West Coast of America, described in Hook. *Fl. Bor. Americana.*

253. (6.) Trifolium *microdon* (Hook. et Arn.); glabrum, inferne decumbens, ramosum, foliis obcordatis acute serratis, stipulis ovatis acuminatis integerrimis, involucris striatis multifidis capitulo hemisphærico parvo brevioribus, laciniis lanceolatis acuminatis 3–4-fidis subspinulosis, calycis dentibus brevissimis triangulari-ovatis acutis ciliato-serrulatis corolla brevioribus.—Valparaiso, *Cuming* (*N.* 747.)—No species of the beautiful tribe of involucrated *Trifolia* is more distinct than the present. The heads of flowers are small, though much larger than those of *T. microcephalum.*

254. (7.) Trifolium *depauperatum*, Desv.—Conception, *Macrae; Messrs. Lay* and *Collie.* Valparaiso, *Cuming* (*N.* 746.)

255. (1.) Lotus? *subpinnatus*, Lagasc.—*Hook. et Arn. in Bot. of Beech. Voy. v.* 1. *p.* 17. *t.* 8.—Conception, *Messrs. Lay* and *Collie; Cuming* (*N.* 138.); *Macrae.* Valparaiso

*Mathews* (*N.* 289.); *Cuming* (*N.* 496.)—Mr. Bentham refers this to his genus *Hosackia*: and there is perhaps no true *Lotus* on the Pacific side of America.

256. (2.) Lotus *corniculatus.*—*β. major,* DC.—Chiloe, *Cuming* (*N.* 38.)

257. (1.) Psoralea *glandulosa,* Linn.—Chili, *Mr. Menzies.* Santa Rosa (Chili), *Dr. Gillies.* Valparaiso, *Bridges; Mathews* (*N.* 218.); *Cuming* (*N.* 586.) Buenos Ayres (cult.), *Tweedie.*

258. (2.) Psoralea *Higuerilla* (Gill. *mst.*); fruticosa, ramis pubescentibus, foliis pinnatim trifoliolatis subglabris ovatis acuminatis, petiolis petiolulisque pubescentibus inconspicue glandulosis, racemis axillaribus pedunculatis pubescentibus folio 2–3-plo longioribus, bracteis caducis (nullis?), calyce sericeo-pubescente demum glabriusculo glanduloso, legumine subgloboso transversim ruguloso subglabro.—Near La Reducion, on the Pampas of Cordova, *Dr. Gillies.*—nom. vern. *Higuerilla.*

259. (1.) Indigofera *Anil,* Linn.?—Santa Cruz, in the Missions of Brasil, *Baird.*—The only specimen is very imperfect.

259.* (1.) Clitoria *Brasiliana,* Linn.—Missions of South Brasil, *Tweedie.*

260. (1.) Cologania? *heterophylla* (Gill. *mst.*); glabriuscula, caule filiformi decumbente, foliis breviter petiolatis simplicibus basi bistipellatis lanceolatis inferioribus latiusculis superioribus angustis acuminatis reticulatis nervis duobus marginalibus centrali similibus, floribus solitariis binisve brevi-pedunculatis, legumine sessili! lineari-oblongo compresso 10–12-spermo juniore sericeo demum glabro, stylo sericeo sensim acuminato, stigmate capitato. —El Rio Quarto, west side of Las Pampas, *Dr. Gillies.* Monte Video, *Tweedie.*—We find it difficult to refer this to its proper genus. From *Cologania* it differs by the sessile legumen, the style covered with short adpressed

silky hairs, and the capitate stigma. The pod is incrassated at both sutures. Calyx bibracteolate at the base, pubescent, and slightly tubular; it is 4-cleft, the segments lanceolate, acute, the upper one the longest.

261. (1.) Galactia *Jussiæana, Kunth, Mim. t.* 55.—*Rhynchosia brachypoda, Gill. mst.*—On the Pampas of Buenos Ayres, *Dr. Gillies; Tweedie.*—This has certainly the habit of a *Rhynchosia.*

262. (2.) Galactia? *stenophylla* (Hook. et Arn.); suffrutex, minutissime pubescens, foliis sessilibus, foliolis ternis linearibus obtusis mucronulatis basi in petiolum attenuatis coriaceis subtus celluloso-impressis, pedunculis axillaribus solitariis flores 6–7 corymbosos gerentibus, calyce sericeo.—Arroya del Sauce, Banda Orientale, *Tweedie.*—Calyx with two small bracteæ at its base, 4-cleft; segments nearly equal, the upper being rather broader, and more obtuse. Petals papilionaceous, apparently white, rather large, and nearly equal, with distinct claws: vexillum suborbiculari-reniform, the unguis furnished with a thick fleshy scale, to which is attached the free stamen: the lamina of each of the alæ is saccate at the base, on the side next the vexillum, and their claws adhere to the column of stamens; the carina is obtuse, of one piece, but divided upwards, half way from the base, and each segment is saccate like the alæ. The stamens are diadelphous (9 and 1), the tube split open on one side. The germen is linear-oblong, densely silky, the hairs close-pressed, and pointing upwards. The style is glabrous, about one-fourth as long as the germen, compressed, slightly curved, attenuated from its base, which is as broad as the germen, to the point, where it is truncate, bearing a stigma, only distinguisnable by the colour; ovules 8–10.—As this analysis agrees with no known genus, we should willingly have constituted a new one (*Platystylus*), but we leave the plant in the allied *Galactia*, from the absence of fruit, which alone would enable us to determine it satisfactorily.

263. (1.) Dalea *elegans* (Gill. *mst.*); fruticosa, glabra, ramis erectis subvirgatis glandulosis, foliis impari-pinnatis, foliolis 14–16-jugis parvis oblongo-cuneatis obtusis petiolatis supra lævibus subtus multi-glandulosis, spicis terminalibus pedunculatis cylindraceis, rachi glandulosa calycibusque sericeo-villosissimis, bracteis ovatis cuspidato-acuminatis glandulosis calyce brevioribus, dentibus calycinis setaceis corolla (violacea) multo brevioribus.—El Cerro del Morro (Prov. of San Luis), *Dr. Gillies.*

264. (1.) Glycyrhiza *astragalina* (Gill. *mst.*); glabra, foliis pinnatis sub 6-jugis, foliolis lineari-oblongis retusis mucronatis minute glandulosis, spicis laxis axillaribus pedunculatis folio longioribus.—Conception, *Cuming* (*N.* 812.) Valley of Uspallata, Andes of Mendoza, *Dr. Gillies.*

265. (1.) Galega *officinalis*, Linn.—Buenos Ayres (cult.), *Tweedie.*

266. (1.) Sesbania *occidentalis*, Pers.—Buenos Ayres (cult.?), *Tweedie.*

267. (1.) Colutea *arborescens*, Linn.—Mendoza (cult.), *Dr. Gillies.*

268. (1.) Sutherlandia *frutescens*, R. Brown.—Mendoza (cult.), *Dr. Gillies.*

269. (1.) Phaca *inflata* (Gill. *mst.*); procumbens, glabra, foliolis 6–7-jugis oblongis obtusis brevissime mucronulatis, stipulis ovatis acutis liberis, racemis laxis folio subdimidio brevioribus, (floribus ochroleucis parvis), calycibus bracteisque glaberrimis, legumine ovato magno membranaceo inflato glabro.—Gravelly soils between Mendoza and Uspallata, by the road of Canota, *Dr. Gillies.* —In the great size of the inflated fruit (as large as a

walnut), this species approaches the Californian *P. densifolia*, Sm., but the foliage and stipules are quite different in the two.

271. (2.) Phaca *Coquimbensis* (Hook. et Arn.); adpresse pubescens, incana, caulibus erectis foliosis, foliis 8–9-jugis, foliolis linearibus lineari-cuneatisve, stipulis liberis ovatis membranaceis acutis pilosis, racemis pedunculatis folio longioribus oblongo-ovatis laxiusculis (floribus ochrolencis parvis), bracteis minutis calycibus rachidibusque nigro-adpresse-pilosis, legumine (mediocri) ovato inflato coriaceo-membranaceo reticulato.—Coquimbo, *Cuming* (*N.* 864.)—The habit of this is very similar to that of *P. aboriginorum*, Rich. (*Hook. Fl. Bor. Am. v.* 1. *t.* 56); and the flowers have also a close resemblance, only wanting the purple spot on the alæ. The fruit, however, is totally different.

272. (3.) Phaca *Arnottiana* (Gill. *mst.*); adpresse pubescens, incana, caulibus cæspitosis prostratis brevibus foliosis, foliis 6–10-jugis, foliolis oblongis retusis, stipulis membranaceis pilosis supra medium inter se concretis, racemis pedunculatis brevibus laxis folium vix æquantibus (floribus purpureis parvis), bracteis minutis calycibus pedicellisque adpresse albido-pilosis, legumine (mediocri) ovato inflato coriaceo-membranaceo variegato subreticulato.—El Cerro de la Polcura, and Las Leñas, on the Andes of Mendoza, *Dr. Gillies.*—Closely allied in many respects to the last species, but different in habit, hue of the flowers, stipules, and colour of the hairs on the calyx. The fruit is almost precisely the same. The habitat is widely different.

273. (4.) Phaca *Cruckshanksii* (Hook. et Arn.); subrobusta, decumbens, incana vel glabra, foliis 7–9-jugis, foliolis oblongo-cuneatis obtusis emarginatisve, stipulis ovatis acuminatis membranaceis inferioribus concretis, racemis capitatis laxis folio longioribus, floribus (majusculis luteo-violaceis) patentibus, bracteis parvis, calycibus pedicellisque nigro-adpresso-pilosis, vexillo amplo, legumine oblongo corneo-coriaceo crasso compresso transversim

striato-reticulato subpiloso suturis marginatis.—Cordillera of Chili, *Mr. Cruckshanks; Cuming* (*N.* 319.) Baths of Collina, *Macrae.* Cerro del Diamante, and Cerro de la Polcura, Andes of Mendoza, *Dr. Gillies.*—This has large and handsome flowers, and fruit of a peculiarly hard texture, most allied to that of *P. pectinata* (*Hook. Fl. Bor. Am. t.* 54.), but compressed at the sides. Dr. Gillies' specimens, although from the eastern declivity, we have referred here on account of the fruit; but they are not in flower.

274. (5.) Phaca *carinata* (Hook. et Arn.); appresso-pubescens, subincana, caulibus erectiusculis gracilibus, foliis subsexjugis, foliolis lineari-oblongis subtus præcipue pubescentibus, stipulis concretis, racemis 5–7-floris laxis folio longioribus, floribus (majusculis luteo-violaceis) patentibus, vexillo amplo, bracteis minutis, legumine reflexo oblongo utrinque acuto depresso valvis acute carinatis coriaceo-membranaceis.—Below Los Hornillos, Cordillera of Chili, *Mr. Cruckshanks.*—*β.* floribus purpureis.—*P. andicola, Gill. mst.*—El Portazuelo del Pantanillo, and de la Casa de Piedra, Andes of Mendoza, *Dr. Gillies.*—*β.*, judging by the fruit in a young state, is not specifically distinct.

275. (6.) Phaca *elata* (Hook. et Arn.); subcanescens vel glabra, caulibus decumbentibus striatis elongatis (fere bipedalibus), foliis 9–11-jugis, foliolis oblongo-cuneatis submarginatis, stipulis ovatis acutis liberis, racemis elongatis laxis folio triplo longioribus, floribus (mediocribus luteo-violaceis) patentibus, bracteis minutis, calycibus rachidibusque pubescenti-nigrescentibus, leguminibus ovatis acuminatis erectis coriaceo-membranaceis inflatis subpubescentibus.—*α.* foliis glabriusculis.—Cordillera of Chili, *Cuming* (*N.* 224.)—*β.* foliis præcipue junioribus valde pilosis.—Valparaiso, *Cuming* (*N.* 734.)

276. (7.) Phaca *canescens* (Hook. et Arn.); tota canescens, caulibus subrobustis adscendentibus striatis, foliis 7–9-jugis, foliolis oblongo-subcuneatis sæpe emarginatis, stipulis parvis ovato-acuminatis, racemis elongatis multifloris laxis folio 3-plo longioribus, pedunculis robustis striatis,

floribus (parvis purpurascentibus) subverticillatis erecto-patentibus brevissime pedicellatis, leguminibus (subparvis) ovatis inflatis coriaceo-membranaceis incanis fere erectis.—Valparaiso, *Cuming* (*N.* 735.)—The long spike-like racemes of small flowers and of hoary legumes, which latter are about the size, and nearly of the form, of the capsule of *Scrophularia*, sufficiently distinguish this species.

277. (8.) Phaca *ochroleuca* (Hook. et Arn.); caulibus elongatis erectis ramosis, ramis elongatis, foliis 11–13-jugis, foliolis ovalibus obovato-cuneatisve acutis obtusisve, stipulis ovatis acutis membranaceis liberis, racemis oblongo-cylindraceis compactis folio 2–3-plo longioribus, floribus (ochroleucis subparvis) patentibus, calyce rachidibusque subsericeis, leguminibus (vix maturis) parvis patentibus oblongis acuminatis compressis stylo rigido uncinato acuminatis membranaceo-coriaceis glabriusculis dispermis.—*α.* glabriuscula.—Valparaiso, *Cuming* (*N.* 389.)—*β.* foliis calycibus rachidibusque piloso-sericeis.—Conception, *Cuming* (*N.* 810.)

278. (9.) Phaca? *flava* (Hook. et Arn.); subcanescens, caule subrobusto decumbente (?) ramoso, foliis 9–11-jugis, foliolis oblongis sublinearibusve obtusiusculis, stipulis parvis ovato-acuminatis liberis, racemis subcapitatis multifloris compactis folio duplo longioribus, floribus (mediocribus flavis) patentibus, rachi pedicellisque sericeis, calycibus glabriusculis corolla vix duplo brevioribus.—Valparaiso, *Cuming* (*N.* 611.)—Of this we have seen no fruit.

279. (1.) Astragalus *procumbens*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 18.—*α.* sericeo-villosus.—Conception, *Messrs. Lay* and *Collie.*—Valparaiso, *Mr. Cruckshanks*; *Mathews* (*N.* 247.)—*β.* foliis supra glabrescentibus.—Valparaiso, *Mr. Cruckshanks*; *Cuming* (*N.* 501.)—*γ.* caule foliisque glabris.—Conception, *Cuming* (*N.* 137.)—*δ.* foliolis linearibus.—Coquimbo, *Cuming* (*N.* 881.)—This has large and handsome flowers, yellow, with the vexillum and extremities of the carina purple. Alæ very

small. Young fruit clothed with long blackish silky hairs.

280. (2.) Astragalus *prostratus*, Hook. et Arn. *l. c. p.* 18.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Cuming* (*N.* 736.)—Mr. Cuming's specimens are in a good state, and show that the stipules are concrete, and not distinct as we formerly supposed, from an examination of those collected by Messrs. Lay and Collie. Along with the last, it therefore comes near *A. unifultus*, DC.

281. (3.) Astragalus *Benthamianus* (Gill. *mst.*); piloso-canescens, caulibus subrobustis adscendentibus, foliis 12–14-jugis, foliolis oblongo-ellipticis, stipulis membranaceis inter se longe ultra medium concretis (majusculis), racemis subcapitatis pedunculatis folium subæquantibus, floribus (majusculis luteo-violaceis) subsessilibus, bracteis membranaceis lanceolatis calyce tubuloso subventricoso adpresse nigro-piloso dimidio brevioribus, legumine ovato calycem paulo superante coriaceo sericeo-tomentoso monospermo sutura superiore introflexa sulcato-depresso.—El Alto de los Manantiales, Andes of Mendoza, *Dr. Gillies.*—This also is very closely allied to *A. unifultus*, DC.: we observed that only one of the ovules in each legume come to perfection.

282. (4.) Astragalus *complicatus* (Gill. *mst.*): subcanescens, caulibus cæspitosis prostratis brevibus ramosis, foliis 6–7-jugis, foliolis obovatis (parvis) carnosulis, stipulis membranaceis ad apicem fere concretis, racemis subcapitatis paucifloris pedunculatis folium æquantibus, pedicello brevi bracteis membranaceis paullo breviore calycibusque adpresse nigro-pilosis, legumine oblongo acuto calycem triplo excedente coriaceo nigro-piloso sub-6-spermo sutura superiore introflexa sulcato-depresso.—El Cerro de la Polcura, Andes of Mendoza, *Dr. Gillies.*—A small plant, of which we have not seen the flowers: it is very unlike any of the above species, either of *Astragalus* or *Phaca.*

283. (1.) Poiretia *psoraloides*, DC.—*Psoralea tetraphylla*,

Poir.—La Reducion, west side of the Pampas, *Dr. Gillies.*—Legumes linear-oblong, much compressed, thin and membranous, composed of 4–5 quadrangular articulations, beautifully covered, as also are the carina and underside of the leaves, with impressed brown glandular dots.

284. (1.) Zornia *angustifolia,* Sm.—El Rio Quarto, west side of the Pampas, *Dr. Gillies.*

### ADESMIA. DC.

§ 1. *Herbæ annuæ. Flores inferiores axillares, solitarii, pedunculati; versus apicem, caulis foliis decrescentibus, paniculam efformantes.*

285. (1.) A. *angustifolia,* Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 19, (ad *calcem.*)—Valparaiso, *Bridges; Mathews* (*N.* 181.); *Cuming* (*N.* 617.)

286. (2.) A. *tenella,* Hook. et Arn. *l. c.*—Valparaiso, *Mr. Cruckshanks; Bridges; Cuming* (*N.* 618.)

§ 2. *Herbæ perennes. Racemi longissimi, aphylli, terminales, paniculati.*

287. (3.) A. *pendula,* DC.—Dry sandy pastures, Buenos Ayres, *Tweedie.*

288. (4.) A. *retrofracta* (Hook. et Arn.); pubescenti-glandulosa viscida, caulibus basi procumbentibus, foliis 7–8-jugis, foliolis obcordatis obscure dentatis, racemis elongatis, calycibus 5-fidis laciniis subulatis, vexillo amplo striato acute retrofracto, leguminibus linearibus deflexis pubescentibus muricato-glandulosis 9–12-spermis.—A. muricata, *Gill. mst.* (non DC.)—La Puente del Sauce (Prov. of Cordova), and on the road to Papagayos, mountains of Mendoza, *Dr. Gillies.*—The corolla is large, and the vexillum remarkably recurved; the carina, too, is sharply bent, so as to resemble the letter V, and its point is acuminated.

289. (5.) A. *Gilliesii* (Hook. et Arn.); pubescenti-cana subviscosa, caulibus basi decumbentibus, foliis 5–8-jugis foliolis oblongis subbipinnatifidis (!) racemis elongatis dentibus calycinis subulatis, leguminibus linearibus deflexis pubescentibus atro-glandulosis 9–11-spermis.—A. dentata, *Gill. mst.* (non DC.)—Mountains near Mendoza, *Dr. Gillies.*—The fruit is precisely as in the last species, but the leaves are very different. We have not seen the flower.

290. (6.) A. *papposa*, DC.?—Hook. et Arn. *in Bot. Beech. Voy. v.* 1. *p.* 18. Conception, *Messrs. Lay* and *Collie; Cuming* (*N.* 794.)

291. (7.) A. *longiseta*, DC.—*Hook. et Arn. l. c. in observ.*—Valparaiso, *Bridges; Mathews* (*N.* 180.); *Cuming* (*N.* 619.)—Our specimens do not quite agree with DC.'s figure (Mem. Legum. t. 50.), in which the habit more resembles that of our *A. conferta.*

292. (8.) A. *leiocarpa* (Hook. et Arn.); caule erecto elato glanduloso-pubescente, foliis 8–9-jugis, foliolis lineari-lanceolatis (unciam longis) acutis, racemis pedicellisque elongatis, vexillo (aurantiaco) striato macula atra notato, leguminibus reticulatis sub 5-spermis.—*α*. leguminis articulis omnibus glabris.—*β*. articulis inferioribus glabris, superioribus rigide et dense plumoso-setosis.—Coquimbo, *Cuming* (*N.* 873.—*α*. in herb. Hook.—*β*. in herb. Arn.)

293. (9.) A. *mucronata* (Hook. et Arn); pubescenti-vel piloso-glandulosa viscida, foliis 5-8-jugis cum spinula terminali, foliolis oblongo-lanceolatis mucronatis rigide pilosis, stipulis magnis subulato-lanceolatis striatis, racemis paniculatis, dentibus calycinis brevibus acutis, leguminibus lineari-oblongis cano-pubescentibus muricatis 3-4-spermis.—*α*. racemo glabriusculo, calyce adpresso-pubescente.—*β*. foliis paucioribus, racemo glanduloso calyceque hirsuto-pubescentibus.—Cordillera of Chili, *Cuming.* *α*. (*N.* 201); *β*. (*N.* 298).—This varies also in the size of the flowers, and length of the pedicels.

294. (10.) A. *conferta*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 20. (ad calcem).—Ojos de Agua, *Mr. Cruckshanks;* Cordillera of Chili, *Cuming* (*N.* 296, 297, and 188). Las Achiras (Prov. of San Luis), *Dr. Gillies.*

295. (11.) A. *aspera* (Gill. *mst.*); adscendens, pubescens, foliis sub-8-jugis, foliolis obovato-oblongis mucronatis pilosis, racemo paniculato multifloro, pedicellis fructiferis erectis, dentibus calycinis brevibus, leguminibus 2-3-articulatis muricatis pilosis, pilis plumosis.—El Valle Hermoso, Andes of Mendoza, *Dr. Gillies.*—β? foliis minoribus vix mucronatis. A. Wallichiana, Gill. *mst.*—Quebrada de Fray Carlos, near the foot of Volcan de Pataroa (Chili) *Dr. Gillies.*—β. may prove distinct, but our specimens are too poor to afford a character.

296. (12.) A. *coronilloides* (Gill. *mst.*); glaberrima, caule adscendente, foliis 4-5-jugis, foliolis obovatis mucronulatis glaucis, racemo simplici confertim multifloro, floribus inferioribus cito deciduis, pedicellis fructiferis erectis nigro-glandulosis calycem vix æquantibus, calycis laciniis ovatis, legumine sub-biarticulato pilis plumosis dense tecto.—Mountain of San Pedro Nolasco (Chili) *Dr. Gillies.*

297. (13.) A. *grandiflora* (Gill.); pubescens, caule adscendente, foliis sub-7-jugis, foliolis orbiculari-obovatis acute serratis, racemo eglanduloso, bracteis minutis, pedicellis gracilibus calyce sub-3-plo longioribus, laciniis calycinis lineari-lanceolatis, floribus (magnis) vexillo striato reflexo, carina inferne ciliato, legumine 6-articulato pubescente nigro-glanduloso.—Sides of mountains near Mendoza, *Dr. Gillies.*

### §. 3. *Caules fruticosi, spinescentes.*

298. (14.) A. *microphylla*, Hook. et Arn. *in Bot. Beech. Voy. v.* 1. *p.* 19. *t.* 9.—Lodd. *Bot. Cab. t.* 1692.—Valparaiso, *Mr. Menzies; Bridges; Messrs. Lay* and *Collie; Mathews* (*N.* 220). *Cuming* (*N.* 609).

299. (15.) A. glutinosa, Hook. et Arn. *l. c.*—Coquimbo, *Messrs. Lay* and *Collie.*

300. (16.) A. *coluteoides* (Gill. *mst.*); fruticosa, robusta, spinis dichotome ramosis validis, foliis numerosis 5-7-jugis foliolis obcordato-orbicularibus dentatis glabriusculis, leguminibus biarticulatis reticulatis glabris, articulo

inferiore abortivo, superiore stylo longo persistente terminato.—At Magote Aspera, on the sides of mountains near Mendoza, *Dr. Gillies.*—The leaflets of this curious plant are larger than any other of this division.

301. (17.) A. *pedicellata* (Hook. et Arn.); fruticosa, pubescens, spinis paucis ramosis gracilibus, foliis sparsis sub 7-jugis, foliolis obovatis subretusis integerrimis, racemo terminali laxo, pedicellis calyce 4-plo longioribus, dentibus calycinis acuminatis, leguminibus sub 6-articulatis sinu angusto dense longissime plumoso-setosis.—Coquimbo, *Cuming* (*N.* 911.)—This approaches in habit most to the last, but differs widely by many important characters.

302. (18.) A. *trijuga* (Gill. *mst.*); fruticosa, pubescens vel glabra, spinis gracilibus dichotomis, foliis sub-3-jugis, foliolis parvulis late obovatis retusis, racemis elongatis terminalibus simplicibus, dentibus calycinis brevibus acutis, leguminibus linearibus 3-5-articulatis falcatis dense longissime plumoso-setosis.—A. *Hookeriana; A. Arnottiana* et *A. Doniana. Gill. mst.*—*β. robustior;* foliolis majoribus nonnunquam submucronatis.—A. argentea; A. alpina; et A. Lambertiana, *Gill. mst.*—*α.* and *β.*; Andes of Mendoza, *Dr. Gillies.*—nom. vernac. *Cuerna de Cabra.*—This is very spinous and hence called "*Goats' horns*" by the natives. It is more or less robust, and the leaflets are variable in size and pubescence. The fruit is alike in all the states, which we have reduced as above.

303. (19.) A. *horrida* (Gill. *mst.*); fruticosa, subcæspitosa, ramis distortis validis, spinis robustis brevibus divaricato-ramosis horridis, foliis 3-jugis, foliolis parvulis linearibus canaliculatis, racemis perbrevibus subumbellatis, dentibus calycinis brevibus acutis, leguminibus 3-4-articulatis longe plumoso-setosis.—*α.* A. Capricornica, Gill. *mst.*—Mountains near Mendoza, *Dr. Gillies.*—*β.; minor;* ramis brevissimis dense cæspitosis, foliolis latioribus.—A. cæspitosa, Gill. *mst.*—Los Manantiales near El Portillo, Andes of Mendoza, *Dr. Gillies.*—This is unquestionably nearly allied to the preceding, but appears to be a much stouter plant, with more tortuous branches and shorter

spines, and the leaves are constantly much narrower. In α. we have frequently observed four pairs of leaflets on the petiole.

304. (20.) A. *Uspallatensis*, (Gill. *mst.*); fruticosa, subrobusta, spinis dichotomis subgracilibus, foliis 4-5-jugis, foliolis parvis linearibus canaliculatis, racemis perbrevibus subumbellatis, dentibus calycinis brevibus acutis, leguminibus (?)—Near Los Hornillos, a little way below the top of Paramillo de las Minas de Uspallata. *Dr. Gillies.*—In habit, this is, to a degree, intermediate between the two last, but is more allied to *A. horrida*, differing chiefly in the greater number of leaflets.

305. (21.) A. *pinifolia* (Gill. *mst.*); fruticosa, erecta, glabra, ramis strictis gemmas foliiferas gerentibus, spinis paucis brevibus validis parce ramosis, foliis 3-jugis, foliolis filiformibus, racemo brevi, dentibus calycinis brevibus acutis, leguminibus sub 3-articulatis dense plumoso-setosis, sinu lato obtuso.—El Valle de las Leñas Amarillas, Andes of Mendoza. *Dr. Gillies.*—The vernacular name is "Leña Amarilla," or yellow wood, and seems to have given the name to the valley in the Andes in which it is found. It approaches in many points the *A. horrida*, and *A. Uspallatensis*, but the straight appearance of its branches is totally at variance with their scraggy distorted habit. The leaflets also are much longer than in either of the other two, measuring about half an inch.

### §. 4. *Caules fruticosi, inermes.*

306. (22.) A. *balsamica*, Bertero.—Hook. et Arn. *l. c.*—Mimosa balsamica, *Molina.*—Valparaiso, *Mr. Cruckshanks; Bridges; Cuming* (*N.* 720). West side of Cuesta de la Dormida (Chili). *Dr. Gillies.*

307. (23.) A. *viscosa* (Gill. *mst.*); glanduloso-viscosa, fruticosa, foliis numerosis breve petiolatis, foliolis approximatis obovatis dentatis, racemo terminali elongato, bracteis ovatis conspicuis, (floribus magnis), dentibus calycinis acuminatis, pedicellis demum arcuato-deflexis, leguminibus 5-6-articulatis pubescentibus atro-glandu-

losis.—Valle del Rio Tinguirica, at El Sambullon (Chili), *Dr. Gillies.*—The flowers agree in size with those of *A. grandiflora*, but the foliage, bracteæ and pedicels (the latter shorter and stouter) are very different, and the plant is decidedly shrubby.

308. (24.) A. *bracteata* (Hook. et Arn.); fruticosa leviter subpubescenti-viscida decumbens ramosa parce foliosa, foliis 3-jugis foliolis obovatis angulato-pinnatifidis, laciniis apice glanduloso-porosis, racemis longissimis terminalibus robustis attenuatis multifloris, floribus (parvis) sæpissime abortivis, bracteis maximis latis foliaceis palmatis laciniis apice glanduloso-porosis viscidis, floribus solitariis vel geminis in singula bractea, dentibus calycinis brevissimis obtusis.—(Tab. CIV.)—Baths of Colina, *Cuming* (*N.* 173.)—This is perhaps the most remarkable of this beautiful, sportive, and now extensive genus. The whole plant, though shrubby, is of a green colour. The leaves are few and confined to the lower part of the stem. The racemes, which resemble the stems or branches in substance and colour, are sometimes two feet long, bearing very numerous, large, foliaceous, palmate bracteas; the lower ones have one or two pedicels, from which the flowers have fallen; the upper become gradually smaller, and have rather small flowers. The laciniæ of these bracteæ, especially of the upper ones, as well as the segments of the leaflets, become cylindrical at their points, and are perforated with a glandular pore, filled with a clammy fluid.

Tab. CIV. *Fig.* 1. Bracteæ and flower. *Fig.* 2. Laciniæ of a bractea. *Fig.* 3. Leaf:—*magnified.*

309. (25.) A. *Loudonia* (Hook. et Arn.); fruticosa cano-sericea erecta ramosissima valde foliosa, foliis sessilibus 3-jugis foliolis lanceolatis rigidis patentibus rachi longioribus, pedunculis axillaribus solitariis calycem 5-fidum sericeum æquantibus, vexillo sericeo, leguminibus (vix maturis) triarticulatis appreso-sericeis calyce duplo longioribus.—*Loudonia, gen. nov. Bertero in Herb. Cuming.*—Valparaiso, *Cuming* (*N.* 579.)

—So different is the appearance of this very beautiful plant from the other species of *Adesmia*, that it is not surprising that Bertero should have looked upon it as a distinct genus; yet it possesses all the true characters of *Adesmia*, viz. the free filaments of the stamens, and the jointed legumes, of which the upper edge is straight, and the other lobed, and leaves which are abruptly pinnate; a setula taking the place of the terminal leaflet. These leaflets are large in proportion to the length of the rachis. The flowers are large, handsome, numerous, as are the very silky leaves; and the whole plant has a good deal the habit of some *Cytisus*. We have retained the generic name of the excellent Bertero for that of the species.

§ 5. *Subacaulis, foliis trifoliolatis.*

**310.** (26.) A. *trifoliolata* (Gill. *mst.*); subacaulis cano-pubescens, foliis longe petiolatis 3-foliolatis, foliolis orbicularibus integerrimis subtus præcipue adpresso-sericeis terminali longius petiolulato, racemo foliis breviore, calycibus pedicellisque sericeis nigro-glandulosis, leguminibus 3–4-articulatis setis longis sericeo-plumosis dense tectis. (Tab. CV.)—Near the summit of Cerro del Diamante, a volcanic mountain near Mendoza, *Dr. Gillies*.—This, the last of the numerous species of *Adesmia* with which we are acquainted from temperate South America, is not the least remarkable; being a small and almost stemless plant, with large and ternate leaves; the only instance known of such a structure of foliage. The flowers, which we have only seen in a specimen belonging to Dr. Gillies, are moderately large, deep orange, with a dark purple blotch on the carina. The root appears to be perennial, and the fruit is entirely that of an *Adesmia*.

Tab. CV. *Fig.* 1. Legumen:—*magnified.*

**311.** (1.) Aeschynomene *latifolia*, Spr.—Mouths of La Plata, *Tweedie*.—Our specimen is only in flower, and has quite the habit of *Cassia Chamæcrista*. The petioles are rough with numerous tuberculated pellucid glands: the leaflets are not above a line in length, slightly 3-nerved at the base. Racemes axillary, with a small pinnated leaf about the middle of the peduncle. Calyx marked with numerous pellucid glandular lines: segments obtuse.

312. (1.) Desmodium *cuneatum* (Hook. et Arn.); erectum fruticosum pubescens, foliis fere omnino sessilibus ternatis foliolis cuneato-oblongis obtusis apiculatis subtus nervis prominentibus reticulatis, racemis terminalibus spicatis densis breve-pedunculatis, pedicellis solitariis binisve.—Uraguay, *Baird; Tweedie.*

313. (2.) Desmodium *uncinatum*, DC.—Woods of the Uraguay and Missions of Brazil, *Tweedie.* Dry sandy banks of Arroyo del Sauce, *Dr. Gillies.*

314. (1.) Vicia *nigricans*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 20.—Lathyrus Macræi, *Hook. et Arn. l. c. p.* 21. (ad calcem L. pubescentis).—Conception, *Messrs. Lay* and *Collie; Macrae.* Valparaiso, *Mr. Cruckshanks; Bridges; Mathews* (*N.* 254.); *Cuming* (*N.* 697.)—The pubescence is variable, so that sometimes the leaves are quite glabrous. This, like the following, has the hairs extending a considerable way below the stigma, but they extend all round the style. We are now satisfied that our *Lathyrus Macræi,* above quoted, belongs to this species, in which we had strangely overlooked the pellucid dots of the leaves while making the description.

315. (2.) Vicia *Macræi* (Hook. et Arn.); pubescens, caule prostrato angulato, foliis 6–9-jugis, foliolis ellipticis obtusis subtus nitidis, cirrhis divisis, stipulis semisagittatis profunde angulato-dentatis, pedunculis foliorum longitudine confertim multifloris, dentibus calycinis brevibus subæqualibus inferioribus sensim majoribus, (petalis luteis purpureo-variegatis), leguminibus deflexis oblongis glabris stylo elongato terminatis.—Cordillera of Chili, *Macrae; Cuming* (*N.* 193.)—Allied to the preceding, but abundantly distinct. It becomes discoloured in dry-

ing, but not black. The style is hairy all round, though not in a great degree, for some way below the extremity, not bearing a thick tuft at the very apex, as in the following species, and as is usual in the genus. This, and the last, are intermediate in character and habit between *Vicia* and *Lathyrus*, and approach too closely, by the former, to *Orobus*.

**316.** (3.) Vicia *pallida* (Hook. et Arn.); pubescenti-pilosa, caule gracili, foliolis 10–12 lineari-lanceolatis mucronatis alternis oppositisque, cirrhis ramosis, stipulis semisagittato-linearibus, pedunculis 3–7-floris folium fere duplo superantibus, floribus laxis secundis (luteis), dentibus calycinis inæqualibus superioribus latioribus lateralibus lanceolatis paullo brevioribus, inferiore subulato subæquante, vexillo late obcordato, carina ad medium curvata, stylis apice dense barbatis, germine glaberrimo.—Valparaiso, *Mr. Cruckshanks; Bridges; Cuming* (*N.* 418 and 590.)—Closely allied as is this species to *V. Cracca*, it is surely quite distinct: in *V. Cracca*, the upper teeth of the calyx are almost obsolete, the vexillum is linear-oblong and slightly panduriform when expanded, the sides of the upper portion only acutely bent back; there also the carina is not bent, until within less than a fourth of its length from the apex; hence the whole flower has a narrow, almost cylindrical appearance.

**317.** (4.) Vicia *graminea*, Sm. *in Rees' Cycl.*—Meadows, Buenos Ayres, *Tweedie.*—*β. robustior*, foliolis lato-linearibus retusis cum mucrone.—Marshy meadows of Buenos Ayres, *Tweedie.*—*γ. pauciflora*, foliolis angustis (ut in *α.*), racemis bifloris folio longioribus.—V. pauciflora, *Gill. mst.*—Mountains of San Luis and Mendoza, *Dr. Gillies.*—*δ. multiflora*, foliolis angustis (ut in *α.*), stipulis pauce subulato-dentatis, racemis laxis sub-7-floris folio duplo longioribus.—Buenos Ayres, *Dr. Gillies.*—In all these, there seem never to be more than six leaflets; in *α.* and *β.* the racemes are usually 3–4,- very rarely 5-flowered, and not exceeding the leaf; the stipules are also entire. We have marked above how the var. *γ.* and *δ.*

differ. Mixed with Dr. Gillies' specimens of the above (we are uncertain from which locality), is perhaps a fifth variety (ι), with racemes 2- rarely 3-flowered, shorter than the leaf, and stipules deeply toothed, but the leaflets, which are rather broader and shorter than in α, γ, δ, are usually 10 in number; there seems, however, no other difference. α. and β. have blue or purplish flowers: all those from Dr. Gillies (by drying?) become yellowish-white. De Candolle has omitted this species.

318. (5.) Vicia *dentata* (Gill. *mst.*); pubescenti-villosa, caule angulato-sulcato, foliolis ellipticis versus apicem spinuloso-dentatis sub-10 alternis, cirrhis ramosis, stipulis semisagittato-ovatis breviter acuminatis, racemis brevibus 10–12-floris pedunculatis folio brevioribus, floribus imbricatis secundis (parvis flavidis), dentibus calycinis subæqualibus subulatis tubo longioribus, legumine lineari-oblongo compresso pubescente.—Pampas of Buenos Ayres, *Dr. Gillies.*

319. (6.) Vicia *micrantha*, Hook. et Arn.—V. parviflora, *Hook. et Arn. in Bot. of Beech. Voy. v.* 1. *p.* 20. Conception, *Messrs. Lay* and *Collie.*—Valparaiso, *Cuming* (*N.* 725).—When we described this species, we forgot that the name *parviflora* was preoccupied.

320. (7.) Vicia *linearifolia* (Hook. et Arn. *l. c.*)—Conception, *Messrs. Lay* and *Collie.*

321. (8.) Vicia *bijuga* (Gill. *mst.*); perennis cæspitosa, caulibus brevibus prostratis, foliis bijugis, foliolis (parvis) obovatis retusis cum mucrone parce subvillosis setula breve petiolum terminante, stipulis semisagitto-ovatis, pedunculis solitariis brevibus unifloris, dentibus calycinis subæqualibus tubo dimidio brevioribus, legumine oblongo tumido 2–3-spermo, seminibus globosis lævibus (variegatis).—El Cerro de la Polcura, Andes of Mendoza, *Dr. Gillies.*—Allied in habit to *V. lathyroides.*

322. (1.) Lathyrus *sessilifolius*, Hook. et Arn. *l. c.*—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Bridges; Cuming* (*N.* 628.); *Mathews* (*N.* 242.) Pampas of Bu-

enos Ayres, *Dr. Gillies.*—The length of the upper calycine segments will easily distinguish this from the allied *L. Magellanicus.*

323. (2.) Lathyrus *pubescens,* Hook. et Arn. *l. c.*—Conception, *Messrs. Lay* and *Collie; Cuming* (*N.* 136.) Baths of Collina, *Macrae; Cuming* (*N.* 222 and 268.) Valparaiso, *Cuming* (*N.* 484.) Andes of Mendoza, abundant, *Dr. Gillies.* Islands of the Parana River, *Baird.* Buenos Ayres (cult.), *Tweedie.*

324. (3.) Lathyrus *tomentosus,* Lam.—Pampas of Buenos Ayres, *Dr. Gillies.*

325. (4.) Lathyrus *macropus* (Gill. *mst.*); glabriusculus, caule angulato striato, foliis inferioribus unijugis superioribus sensim bi-tri-vel 4-jugis inferiorum cirrho brevi simplici superiorum elongato ramoso, foliolis lanceolatis mucrone rigido acuminulatis 7-nerviis subtus minute pubescentibus, stipulis semisagittato-lanceolatis, pedunculis elongatis folio triplo longioribus multifloris, calyce rachique dense pubescentibus, dentibus calycinis lanceolatis acuminatis superiore subulato.—On the Andes of Mendoza, abundant, *Dr. Gillies.* Below Hornillos, Andes of Chili, *Mr. Cruckshanks.*—Nom. vernac. *Aguas de Nieve.*—When there are one or two pairs of leaflets only, the nerves are furnished with crossing and reticulating veins, but when there are three or four pair, the leaflets are very narrow, and scarcely any trace of the transverse veins can be perceived. The flowers are large.

326. (5.) Lathyrus *subulatus,* Lam.—L. Hookerianus, *Gill. mst.*—Monte Video, *Tweedie.* Pampas of Buenos Ayres, *Dr. Gillies.*

327. (6.) Lythyrus *Cicera,* Lin.?—Valparaiso, *Mr. Cruckshanks.*

328. (7.) Lathyrus *hirsutus,* Linn.?—Valparaiso, *Cuming* (*N.* 726.)—Not possessing fruit of this and the last species, we cannot decide with certainty what they are.

329. (8.) Lathyrus *crassipes* (Gill. *mst.*); annuus glaber, caule diffuso alato, foliis unijugis foliolis lineari-lanceolatis mucronatis, cirrhis trifidis, stipulis semisagittato-ovatis petioli longitudine integerrimis, pedunculis (tumi-

dis) petiolo 2–4-plo longioribus apice articulatis bifloris obsolete bracteolatis, pedicellis brevissimis, calycis glabri laciniis anguste lanceolatis tubum duplo superantibus, legumine (immaturo) lineari 15–18-spermo glabro nervoso reticulato sutura ventrali carinata.—Pampas of Buenos Ayres, *Dr. Gillies*.—Upon the incrassation of the peduncle we lay little stress, having observed that character in some Europæan species, but the shape of the legume is totally different from that of *L. sativus* or *L. Cicera*, the only two with which it is likely to be confounded.

330. (1.) Rhynchosia *Mendacinensis* (Gill. *mst.*); caule volubili terete patentim piloso, foliolis 3 petiolo vix duplo longioribus subcuneato-ellipticis obtusis mucronatis omnibus basi æqualibus et trinerviis cateroquin penninerviis utrinque reticulato-venosis margineque setoso-hispidulis subtus nitidis, stipulis lanceolatis striatis, racemis axillaribus longe pedunculatis.—Uncultivated places near Mendoza, *Dr. Gillies*.—Our specimens are in too imperfect a state to afford more characters.

331. (2.) Rhynchosia? *sericea* (Gill. *mst.*); suffruticosa pussilla erecta (?) adpresse sericeo-pubescens, foliolis 3 subcordato-ovatis rigide acuminulatis penninerviis lateralibus petiolo duplo longioribus terminali majore, pedunculis axillaribus folio duplo longioribus versus apicem paucifloris, corolla glabra calyce duplo majore, ovario sericeo stylo glabro subulato elongato.—On hills near Las Achiras (Prov. of San Luis), *Dr. Gillies*.—Of this also we do not possess the fruit. The flowers are nearly sessile, and the calyx appears bibracteolate at the base. The flowers are too large for a *Rhynchosia*, yet we scarcely think it is a *Glycine*.

332. (3.) Rhynchosia *Senna* (Gill. *mst.*); puberula, caule vix volubili terete, foliolis 3 late ovatis mucronatis basi subcordatis trinerviis cæteroquin penninerviis reticulato-venosis lateralibus minoribus basi inæqualibus petiolum æquantibus, stipulis subulatis rigidis, pedunculis axillaribus solitariis vel raro binis unifloris petiolo longioribus,

calycis laciniis subulatis tubo longioribus petala æquantibus, legumine oblongo basi attenuato velutino.—Near El Rio Quarto, on the Pampas of Cordova, *Dr. Gillies.*—Nom. vernac. *Sen.*—Dr. Gillies informs us that this is used by the natives in place of *Senna.*

333. (1.) Dolichos *vexillatus,* Humb. et Kunth?—Banks of the River Plate, *Dr. Gillies.*—The legumes are not mature, and the upper lip of the calyx is undivided, hence arise our doubts whether it be the plant of Humboldt.

334. (1.) Lablab *vulgaris,* Savi.—Monte Video and Buenos Ayres (cult.?), *Dr. Gillies.*—Our specimens are exceedingly imperfect.

335. (1.) Canavalia *Paranensis* (Hook. et Arn.); glabra, foliolis ovatis obtuse acuminatis coriaceis subtus minute reticulatim venosis, racemis multifloris, calycis basi bibractiolati labio inferiore minuto integro (!) denticuliformi.—Plentiful in the woods of Rio Parana, *Tweedie.*

### CAMPTOSEMA. (Hook. et Arn.)

*Calyx* minute bibracteolatus, campanulatus, subæqualiter 4-fidus; lobis ovatis, acuminatis, superiore latiore. *Corollæ* petala æqualia, obtusa, longe unguiculata; vexillo et carina basi longiuscule deorsum bi-, alis uni-calloso-dentatis: *Vexillum* reflexum, ovato-oblongum; *alæ* anguste oblongæ: *carina* basi fere ad summum biceps, elliptico-oblonga. *Stamina* diadelpha (9 et 1), corollam subæquantia. *Pistillum* corolla longius. *Germen* lineare, longe stipitatum, pubescens, 8–10-ovulatum. *Stylus* subulatus, glaber, germine longior, rectiusculus. *Stigma* parvum, obtusum. *Legumen* (immaturum) lineari-oblongum sericeo-pubescens, stipite (ut in germine) calycem æquante, stylo subulato longe acuminatum.—Frutex *volubilis, glaber.* Folia *pinnatim 3-foliolata;* foliola *basi bistipellata, elliptico-oblonga, apice retusa cum mucronulo, supra viridia, nitida, subtus pallida.* Racemi *axil-*

*lares, folio longiores:* pedicelli *calycem vix æquantes.* Calyx 4 *lineas longus, coriaceus, nigro-fuscus.* Corolla *rubra calyce triplo longior.*

336. (1.) C. *rubicundum,* (Hook. et Arn.)—Banda Orientale, *Tweedie.*—The habit is much that of *Kennedia.*

337. (1.) Lupinus *albescens* (Hook. et Arn.); elatus totus appresso-sericeus, caule folioso, foliis longe petiolatis enneaphyllis, foliolis lanceolatis acutissimis, racemo elongato multifloro, floribus subverticillatis, bracteis caducis calyce brevioribus.—Banda Orientale, *Baird.*—This fine species has much general affinity with the *L. leucophyllus* of Mr. Douglas, in *Bot. Reg.;* but here the silky hairs are very closely adpressed. Flowers apparently white.

338. (2.) Lupinus *aureo-nitens* (Gill. *mst.*); ubique (corollis exceptis) sericeo-villosus aureo-nitens, caule folioso, foliis longe petiolatis 3–5-phyllis, foliolis lanceolatis acutis inferne attenuatis, racemo elongato multifloro, floribus alternis, bracteis calyce brevioribus.—On the Pampas near La Cabeza del Tigre (*Herb. Hook.*), Andes of Mendoza, near Villavicenzio (*Herb. Arn.*), *Dr. Gillies.* Flowers purple.

339. (3.) Lupinus *andicola* (Gill. *mst.*); annuus pubescenti-lanatus, caule breviusculo, foliis longe petiolatis 8–9-phyllis, foliolis obovato-lanceolatis obtusis, racemo elongato, floribus verticillatis, bracteis deciduis calyce dense sericeo brevioribus.—Ascent to the Paramillo, above Villavicenzio, Andes of Mendoza, *Dr. Gillies.* Below Hornillos, Andes of Chili, *Mr. Cruckshanks.*

340. (4.) Lupinus *microcarpus,* Sims.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Mr. Cruckshanks ; Bridges ; Mathews* (*N.* 363.); *Cuming* (*N.* 567.) Andes of Mendoza and Chili, *Dr. Gillies.*

341. (1.) Erythrina *Crista-galli,* Linn.—Buenos Ayres, perhaps introduced; and cultivated in the gardens at Mendoza, *Dr. Gillies.*

342. (1.) Mimosa? *adpressa* (Hook. et Arn.); fruticosa aculeata, aculeis sparsis rectis, ramis setis subulatis fuscis retrorsis arctissime appressis, foliis conjugato-pinnatis pinnis multijugis foliolis (minutis) imbricatis lineari-oblongis mucronatis glabris, rachi subtus setis subulatis fuscis rectis antrorsum arctissime adpressis, stipulis lato-lanceolatis membranaceis striatis, glandulis nullis, capitulis globosis sessilibus, calyce corollaque 4-fida staminibus 4-plo brevioribus.—Uraguay, *Baird.* Entre Rios, *Tweedie.*—This comes exceedingly close to *M. ciliata,* Spr., from Monte Video, nor do we perceive any difference, except that in ours the pinnæ are from 20–30 jugate: in Sprengel's, only 6-jugate.

343. (2.) Mimosa? *Uraguensis* (Hook. et Arn.); fruticosa aculeata aculeis rectis, foliis bijugis pinnis 10–12-jugis, foliolis lineari-oblongis (parvis) acutis, stipulis stipellisque (obtusissimis) late-cordatis, capitulis globosis, staminibus corollam 4-plo excedentibus.—Uraguay, *Baird.*

344. (3.) M. *asperata,* Willd.—Marshes of Rio Parana, *Tweedie.*—β. *glabrior.*—Sandy Shores of La Plata, *Tweedie.*

345. (1.) Inga *Uraguensis* (Hook. et Arn.); inermis, ramis ferrugineo-velutinis, petiolo inter pinnas alato, alis semioblongis, foliis simpliciter pinnatis 4-jugis, pinnis oblongo-ovatis acutiusculis mucronatis utrinque parcissime pilosis subcoriaceis supra nitidis subtus pallidis, petiolo nervo primario supra omnibusque infra ferrugineo-villosis, glandula cupuliformi sessili inter omnes pinnas, floribus subdense spicato-paniculatis terminalibus, pedunculis calycibus corollaque aureo-velutinis tomentosis.—Shores of the Rio Uraguay, *Tweedie.*—Apparently allied to *I. affinis,* DC.

346. (2.) Inga *parvifolia* (Hook. et Arn.): inermis, foliis bipinnatis 4–6-jugis, pinnis multijugis, foliolis (minutis) arcte dispositis lineari-oblongis acutis glabris parce piloso-ciliatis, glandulis nullis, capitulis hemisphæricis pe-

dunculatis axillaribus solitariis, floribus glabris, staminibus longissimis acumine lineari recto piloso.—Banda Orientale, *Baird.* Uraguay, *Tweedie.*—The legume is about three inches long: we have only seen it in a specimen from Mr. Tweedie, belonging to Dr. Gillies.

347. (1.) Desmanthus *strictus*, Bert.—Pampas of Buenos Ayres, *Dr. Gillies.*

### Prosopis. Linn.

#### § 1. *Arbores.*

348. (1.) P. *dulcis*, Kunth?; arborea, spinis stipularibus nullis vel parvis, foliis 1–2-jugis, glandulis minimis convexis inter pinnas, pinnis 25-30-jugis foliolis approximatis, (parvis) oblongis glabris minute ciliatis.—P. inermis, *Gill. mst.*—Province of San Luis, *Dr. Gillies.*—Nom. vernac. *Calden.*

349. (2.) P. *flexuosa*, DC.; arborea, spinis stipularibus binis validis, foliis conjugato-pinnatis, glandula inter pinnas minima concava, pinnis 8-18-jugis, foliolis distantibus linearibus obtusis basi attenuatis minute puberulis.—α. pinnis 8-12-jugis.—P. flexuosa, *Gill. mst.*—Acacia flexuosa, *Lag.*—Mendoza and San Juan, *Dr. Gillies; Tweedie.*—Nom. vernac. *Lamer* or *Algaroba de Cavallo.*—β. pinnis 15-18-jugis.—P. *dulcis, Gill. mst.* (non Kunth.)—Province of San Juan and San Luis, *Dr. Gillies.*—Nom. vernac. *Algaroba dulce.*—We see no other difference between these varieties than the above; α. is used for horses, β. by the natives. We have given a specific character to this species, as the marks from the glands, and distance of the foliolæ, have not been hitherto noticed by authors. The leaflets are twice as long as in the preceding.

350. (3.) P. *siliquastrum*, DC.—Mendoza, *Dr. Gillies.* Cordillera of Chili, *Cuming,* (*N.* 257.)—Nom. vernac. *Algaroba de Chile.*—The leaflets are twice as long as in *P. flexuosa*, but not quite so distantly placed: they are covered

with very minute purple dots. The glands between the pinnæ are conspicuous and cupuliform.

351. (4.) P. *torquata*, DC.—Province of San Luis, *Dr. Gillies.* —In our specimens, the leaves are all conjugato-pinnate, with a minute cupiliform gland: the leaflets are as small as in our *P. dulcis*, approximated and puberulous.

352. (5.) P. *astringens* (Gill. *mst.*); arborea, ramis robustis flexuosis, spinis stipularibus binis validis brevibus, foliis bipinnatis sub 5-jugis, glandula inter par infimum crassa urceolata, pinnis sub-20-jugis, foliolis (parvis) lineari-oblongis obtusis glabris basi minute ciliatis, capitulis globosis, pedunculis simplicibus compressis 3–4-nis axillaribus, legumine retiusculo compresso.—Provinces of Mendoza and San Juan, *Dr. Gillies.*—Nom. vernac. *Algarobilla*, or *Black Algaroba.*—The seed-vessels are highly astringent, and are, at Mendoza, in common use for making ink: in medicine, it is applied exactly as *Oak-Galls.*

### § 2. *Frutices.*

353. (6.) P. *humilis* (Gill. *mst.*); fruticulosa, ramis angulatis sulcatis valde spinosis, spinis (ramis abortivis) mollibus binis, foliis perpaucis in apice ramorum et inter bases spinarum simpliciter pinnatis unijugis, foliolis minutis lanceolatis acutissimis petiolo setula terminato 4-plo brevioribus, stipulis minutis subulatis, spicis pedunculatis solitariis medium versus ramorum ad basis latus spinarum, floribus extus glabris.—Pastures, in the Pampas of Buenos Ayres, *Dr. Gillies.*

354. (7.) P. *sericantha* (Gill. *mst.*); fruticosa aphylla (Gill.), ramis teretibus leviter striatis spinescentibus junioribus pubescentibus, spicis breve pedunculatis, calyce sericeo-hirsuto.—Uncultivated places in the Province of San Luis, *Dr. Gillies.*—There are no traces of leaves on our specimens, nor did Dr. Gillies ever observe any.

355. (8.) P. *ephedrioides* (Gill. *mst.*); fruticosa aphylla ?, ramis teretibus striatis spinescentibus glabris, capitulis globosis sessilibus.—Province of San Luis, *Dr. Gillies.*

356. (9.) P. *globosa* (Gill. *mst.*); fruticosa, ramis angulatis sulcatis junioribus pubescentibus, foliis simpliciter pinnatis 1–2-jugis deciduis, foliolis minutis ovato-oblongis pubescentibus, capitulis globosis pedunculatis, leguminibus (junioribus) pubescentibus.—Loma de los Jagueles, Valley of Uspallata, (Prov. of Mendoza), *Dr. Gillies.*

357. (1.) Acacia *strumbulifera*, Willd.—Mimosa circinalis, *Cav. ic. v.* 6. *p.* 41. (in observ.)—Mendoza, *Dr. Gillies.*

358. (2.) Acacia *Sprengelii* (Hook. et Arn.)—Acacia incana, *Spr.*—All along the Uraguay, after passing Salta, *Baird.* Bonpland's Garden, Buenos Ayres, *Dr. Gillies.*—There is no doubt, we believe, of this being Sprengel's plant, (whose name we are obliged to alter, as it is preoccupied); although he omits a prominent character in the petioles being very short. The leaves, at the base of the peduncles, have 15 pair of leaflets; those at the bottom of the floriferous branches are about 30 pair.

359. (3.) Acacia *Bonplandii* (Gill. *mst.*); inermis, ramis acute angulatis, pedunculis petiolis foliolisque subtus pubescenti-lepidotis, foliis bipinnatis 3-jugis, pinnis 11-14-jugis, foliolis oblongis minutis coriaceis imbricatis, capitulis (parvis) globosis axillaribus, pedunculis simplicibus axillaribus subternis, calycibus corollisque pubescenti-farinaceis.—Bonpland's Garden, Buenos Ayres, *Dr. Gillies.* Within tide-mark, on the shores of La Plata, *Tweedie.*

360. (4.) Acacia *lepidota* (Hook. et Arn.); inermis fruticosa, ramis angulatis pedunculis petiolis foliolisque subtus pubescenti-lepidotis, foliis bipinnatis trijugis, pinnis 11–14-jugis, foliolis oblongis (minutis) coriaceis approximatis, capitulis globosis (parvis) brevissime pedunculatis solitariis binisve, calycibus corollaque dense pubescenti-farinaceis.—Uraguay, *Baird.*—This, and the two preceding, are remarkable for a mealiness or scaliness, occasioned as may be seen under a magnifier by minute dense tufts of pubescence. The flowers are small, and apparently yellow: it *only* differs from the preceding by the nearly sessile heads of flowers.

361. (5.) Acacia *adenopa* (Hook. et Arn.); glabra, spinis stipularibus geminis (parvis) gemmam æquantibus, foliis bipinnatis 3–5-jugis, glandula oblonga urceolata sessili infra par infimum ad petioli medium, pinnis 25–30-jugis, foliolis oblongo-linearibus obtusis (parvis) approximatis, capitulis globosis, pedunculis axillaribus 2–5 simplicibus. —Islands of the Uraguay, *Tweedie.*

362. (6.) Accacia *Cavenia,* Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 21.—Mimosa Cavenia, *Molina.*—Valparaiso, *Bridges ; Cuming* (*N.* 753.) Conception, *Messrs. Lay* and *Collie.* Chili, Mendoza, and Buenos Ayres (cult.), *Dr. Gillies.*—Nom. vern. Chil. *Espinillo ;* Bonar. *Espino.*

363. (7.) Acacia *Aroma* (Gill. *mst.*); spinis stipularibus binis ramealibus inferioribus parvis validis superioribus gracilioribus elongatis, foliis bipinnatis sub 13-jugis, glandula concava inter par infimum, pinnis sub 20-jugis, foliolis minutis lineari-oblongis glabris, pedunculis simplicibus axillaribus solitariis folio subbrevioribus, capitulis globosis.—San Juan, *Dr. Gillies.*—“ This species, commonly called *Aroma,* I have only seen a little way south of San Juan, on the way to the river of the same name, on an uncultivated gravelly soil, where it grows to the height of 6 or 10 feet. I have not seen the seed-vessel, but from what I am told, I presume it is a congener of the *Espino* of Buenos Ayres, and *Espinillo* of Chili (A. Cavenia, *H. et A.*) The flowers have the same form, but are destitute of the fragrance of the *Espinillo,* and the general aspect of the two trees is very different.” (Gill. *in litt.*)

364. (8.) Acacia *furcata* (Gill. *mst.*); fruticosa glabra spinosa, spinis binis unica stipulari valida apice furcata segmentis brevissimis divaricatis altera infra gemmam simplici minuta, foliis (parvis) bipinnatis 3-jugis, glandula minuta concava inter par supremum, pinnis 7–9-jugis, foliolis oblongis acutiusculis, capitulis globosis, pedunculo simplici solitario folii longitudine, leguminibus (majusculis) oblongis sinuatis membranaceis planis 5–8-spermis.—Uncultivated places along the foot of the

Andes of Mendoza, *Dr. Gillies.* Buenos Ayres (cult.), *Tweedie.*—Nom. vernac. *Garavato.*—The stipular thorns of this are very remarkable, nearly of equal breadth throughout, until they branch off at the apex into spreading horns.

365. (9.) Acacia *Bonariensis* (Gill. *mst.*); ramis glabris angulato-sulcatis, aculeis ramealibus petiolaribusque sparsis brevibus decurvis, foliis bipinnatis 11–12-jugis longis, pinnis multi-(49-50)-jugis, foliolis glabris lineari-oblongis acutis (parvis), glandula versus petioli velutini basin et inter par extremum pinnarum, pedunculis velutinis, spicis brevibus paniculato-racemosis, floribus pubescentibus.—Buenos Ayres, *Dr. Gillies.* Entre Rios, *Tweedie.*—This species evidently approaches very close to *A. incana,* DC. (not Spreng.), but differs by the glands and glabrous leaves.

366. (1.) Coulteria *tinctoria,* Humb. et Kunth.—*Hook. et Arn. in Bot. of Beech. Voy. v.* 1. *p.* 55. (cum omn. syn.) Ceratonia Chilensis, *Molina and De Cand.*—Cæsalpinia Tara, *R. et P. Fl. Peruv. t.* 374. (ined.)—Valparaiso (cult.), *Bridges; Messrs. Lay* and *Collie.*—The figure of Ruiz and Pavon represents the state with the petioles aculeated.

### GOURLIEA. (Gill. *mst.*)

*Calyx* ebracteolatus, pubescens, breviter campanulatus, bilabiatus: *lab. superius* late emarginatum; *inferius* trilobum, lobis late-ovatis. *Corolla* papilionacea, hypogyna, petalis longiuscule unguiculatis: *vexillum* deflexum orbiculatum, emarginatum, lateribus reflexis: *alæ* majusculæ undulatæ, oblongæ: *carinæ* segmenta lateribus inæqualibus oblonga, apicem versus subcohærentia. *Stamina* 10, hypogyna, libera. *Germen* sessile, anguste ovoideum sericeum. *Stylus* subulatus, glaber, sursum curvatus germine longior. *Stigma* punctiforme. *Ovula* 4. *Fructus* nucamentaceus, globoso-ovoideus: *epicarpium* crasse crustaceo-carnosum: *sarcocarpium* crassum, lignosum,

durissimum, intus transversim profunde sulcatum: *endocarpium* membranaceum (album). *Semen* solitarium, reniforme, breve.—Frutex *spinescens glaber.* Rami *teretes.* Folia *ex gemmis, 2–4-fasciculata, simpliciter pinnata, eglandulosa:* foliola 7–8, *alterna, oblonga, emarginatata, nervosa, decidua.*—Flores *in ramis brevibus spinescentibus fasciculato-corymbosi:* pedunculi calycesque *pubescentes.* Petala *aureo-flava, eleganter venis rubris picta,* carina *excepta.*

367. (1.) G. *decorticans* (Gill. *mst.*) (Tab. CVI.)—Provinces of Mendoza, San Luis, and Cordova, *Dr. Gillies.*—Nom. vernac. *Chañar.*—Dr. Gillies has named this genus in memory of the late *Mr. Robert Gourlie,* who botanized successfully at Mendoza, and lately died there.—A spinescent shrub, with small leaves, rising sometimes to a height of 16 or 20 feet, and covered with rich yellow blossoms about the end of September and early in October. (*Gillies.*)

Tab. CVI. *Fig.* 1, 2. Back and side view of a flower. *Fig.* 3. Stamens and pistil. *Fig.* 4. Pistil. *Fig.* 5. Germen, opened to show the ovules. *Fig.* 6. Legumes, (*nat. size.*) *Fig.* 7. The same laid open (*nat. size.*) *Fig.* 8. The same, *magnified.* *Fig.* 9. Seed. *Fig.* 10. Embryo:—all, but fig. 6, *magnified.*

368. (1.) Cæsalpinia (Sappania) *præcox* (R. et Pav. *Fl. Peruv. t.* 376. *ined.*); fruticosa spinosa, foliis bipinnatis plerumque uni-quandoquidem bi-tri-jugis, pinnis subsexjugis, foliolis oblongis obtusis, floribus racemosis, petalis breviter unguiculatis superiore latiore, leguminibus membranaceis compressis oblongis utrinque acutis reticulatim venosis sub-4-spermis.—C. Brea, *Gill. mst.*—Stony places above Mendoza, on the road to the Papagayos, *Dr. Gillies.*—Nom. vernac. *Brea.*—A thorny shrub, 3-5-feet high.

369. (1.) Poinciana *Gilliesii,* Wall.—*Hook. in Bot. Misc. v.* 1.

*p.* 129. *t.* 34.—Near Rio Quarto and Rio Quinto, and at La Punta de San Luis. Abundant at Mendoza, *Dr. Gillies.*

370. (1.) Hoffmanseggia *falcata*, Cav.—H. chilensis, *Miers.* —Mendoza, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 284.)—*β. andicola*, humilior, racemis floribusque majoribus, petalis latioribus.—H. alpina, *Gill. mst.*—H. andina, *Miers' Chil. v.* 2. *p.* 532.—Near Villavicenzio, at the foot of the mountains near Mendoza, *Dr. Gillies.*—Nom vernac. *Porotillos.*—Of the var. *β.* Dr. Gillies writes, that " this small, but beautiful plant, with its golden or orange tints, gives a glow of colour to a tract of from three to four leagues of country after quitting the mountains to enter the plains, by the defile leading from Villavicenzio, where it may be seen in immense profusion in the month of November." Although abundant there, its range is limited, while that of our *α.* is very extensive. The latter has the petals scarcely twice as long as the calyx: in *β.* they are fully thrice as long.—The Peruvian *H. falcaria*, *β. glandulosa*, Hook. *in Bot. Misc. v.* 2. *p.* 217. is indubitably the *Larrea viscosa*, R. and P. *Fl. Peruv. t.* 377. (ined.), and is a very distinct species.—(*H. viscosa*, Hook. et Arn.)

371. (2.) Hoffmanseggia *gracilis* (Hook. et Arn.); caule diffuso incano-pubescente, foliis subradicalibus bipinnatis sub-4-jugis, pinnis subsexjugis, foliolis puberulis, leguminibus rectiusculis pubescentibus.—Larrea gracilis, *R. et P. Fl. Peruv. t.* 377. (ined.)—Coquimbo, *Cuming* (*N.* 880.)

372. (1.) Parkinsonia *aculeata*, Linn.—Entre Rios, *Tweedie.*

373. (1.) Zuccagnia *punctata*, Cav.—Mendoza, *Dr. Gillies.*

374. (2.) Zuccagnia? *angulata*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 22.—Coquimbo, *Messrs. Lay* and *Collie; Cuming* (*N.* 902.)—Although we have now seen additional specimens from Mr. Cuming, still they are very

imperfect as to fruit, so that we cannot yet pronounce satisfactorily on the genus. With *Zuccagnia* it agrees in the stigma, but the germen and young legume appear very different.

375. (1.) Cassia *corymbosa*, Lam.—Buenos Ayres (cult.), *Tweedie*, and at Mendoza, *Dr. Gillies.*—It does not appear to be wild at Buenos Ayres, although that is the station given by Lamarck and others.

276. (2.) Cassia (Senna) *Hookeriana* (Gill. *mst.*); fruticosa glabra, foliis pinnatis sub-8-jugis, stipulis caducis, foliolis oblongis mucronatis glandula clavato-filiformi inter par infimum, racemis 2–3-floris folio brevioribus, sepalis obtusis antheris biporosis, legumine stipitato membranaceo lato-lineari intus septis obliquis, loculis non pulposis.—El Cerro del Morro (Prov. of San Luis), *Dr. Gillies.*

377. (3.) Cassia *stipulacea*, Ait.—Valparaiso, *Bridges; Mathews* (*N.* 304.); *Cuming* (*N.* 708.) Conception, *Messrs. Lay* and *Collie.*

378. (4.) Cassia (Chamæsenna?) *Cruckshanksii* (Hook. et Arn.); glabra, foliis pinnatis 4-jugis, stipulis deciduis, foliolis oblongo-ovatis acuminatis, glandula cylindrica inter trium jugorum inferiorum paria, pedunculis folio subduplo brevioribus, racemis subcapitatis, sepalis obtusis, antheris oblongis biporosis.—Valparaiso, *Bridges; Mr. Cruckshanks.*—Although this has been raised from seeds sent to the Edinburgh Botanical Garden by Mr. Cruckshanks, yet we have not seen the fruit. We believe, however, there is little doubt about the section to which it belongs. It agrees in general with *C. lævigata* as far as that species is described, but its nearest affinity appears to be *C. stipulacea.*

379. (5.) Cassia *frondosa.* Ait.—Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 22 and 55.—α. Valparaiso, *Bridges; Macrae; Mathews* (*N.* 303.); *Cuming* (*N.* 341.); *Tweedie.* Concon (Chili), *Dr. Gillies.*—β. Coquimbo, *Messrs. Lay* and *Collie; Bridges.*—Dr. Gillies informs us, that our α. is a tree, and is called by the natives *Quebracho*, the wood

being so hard as to injure their hatchets. Mr. Mathews mentions it is a shrub.

380. (6.) Cassia (Chamæsenna) *Arnottiana* (Gill. *mst.*); fruticosa parv glabra inferne nuda, foliis pinnatis 4–5-jugis, stipulis linearibus deciduis, foliolis crassiusculis glaucis cuneato-obovatis retusis, glandula subulata inter par infimum, racemis folio duplo longioribus 2–3-floris, sepalis obtusis, antheris biporosis, (legumine sessili oblongo coriaceo crasso compresso dehiscente suturis tumidulis intus septis transversis incompletis loculis non pulposis, seminibus verticalibus.)—El Valle del Atuel and El Valle de las Leñas Amarillas, Andes of Mendoza, *Dr. Gillies.* Cordillera of Chili, *Macrae.*—The whole plant does not exceed 6 or 8 inches in height.

381. (7.) Cassia (Chamæsenna?) *Cumingii* (Hook. et Arn.); glabra, foliis pinnatis 6-jugis, stipulis subulatis persistentibus, foliolis oblongis linearibusve mucronulatis venosis, glandula inter par infimum tubinata inter reliqua sessili urceolata, racemis ob folia decidua paniculatis laxiusculis, sepalis obtusis, antheris biporosis.—α. foliolis linearibus.—Coquimbo, *Cuming* (*N.* 874.)—β. foliolis oblongis.—Alcapassa, south of Coquimbo, *Mr. Cruckshanks.* —Of this we are in doubt about the section in which it should be placed, having only seen the fruit in a very young state.

382. (8.) Cassia *occidentalis*, Linn.—Buenos Ayres (cult.), *Tweedie.*

383. (9.) Cassia *aphylla*, Cav.—Mendoza and San Luis, *Dr. Gillies.* Plains of Mendoza, near the mountains, *Mr. Cruckshanks.*

384. (1.) Bauhinia *forficata?* Link, *Ic. Plant. Sel. Berol. t.* 36.?—Uraguay, *Tweedie.*—Our specimen has no flower, but the foliage corresponds with the *B. forficata,* except that the segments of the leaves are more obtuse and spreading.

(*To be continued.*)

While the present sheet was in the press, we have had the gratification of receiving from William Jameson, Esq. Professor of Natural History and Chemistry at Quito, and from Colonel Hall of the same place, a most interesting collection of plants, accompanied by notes and drawings, partly from the country of Guayaquil and Esmeraldas, and partly from the snowy summits of the Andes of Quito; and these, together with the numerous Cryptogamic plants previously received from the former of these gentlemen, it is our intention to incorporate and describe with the Peruvian plants of Mr. Cuming, Mr. Cruckshanks, and Mr. Mathews, above noticed, which will thus form a rich addition to what was previously known of the vegetable productions of the western side of intratropical America.

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## MAURITIUS.

This delightful island, so rich in its natural productions, whether under the protection of the French or the British Government, can equally boast of men of science, both able and willing to explore its vegetable treasures. The pages of this work bear ample testimony to the researches of Professor Bojer, and his instructions and his zeal have collected around him a little band of Naturalists from whose exertions many interesting discoveries may be expected; while M. Bouton (to whom no less than to Mr. Telfair and to Professor Bojer, I am indebted for a very extensive collection of the plants of the Mauritius,) is especially engaged in exploring the various quarters of the island: and the result of the labours of both these gentlemen is given in the periodical notices that are published of the meetings of the "Natural History Society of the Mauritius." As these are regularly communicated to me, I cannot do better, from time to time, than to present to the Botanists of Europe a short analysis of their contents. The following is that of the *Proceedings during the year* 1830.

# ANALYSIS OF THE PROCEEDINGS OF THE NATURAL HISTORY SOCIETY OF MAURITIUS, DURING THE YEAR 1830. (EXTRACTED.)

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BOTANY.—The empire of Flora, formerly so extensive in this island, but now more and more restricted by the daily increase of cultivation, still contains sufficient to occupy the attention of persons who devote themselves to this study.

Aublet, Commerson, Du Petit Thouars, Willemet, Noroñhas, Ventenat, La Billardière, Bory, Stadtmann, and more recently MM. Heraud, Sieber, Gaudichaud, D'Urville, Hilsenberg, and our colleague, M. Bojer, have doubtless made known many of our plants; but a great number of species still remain to be described.

M. W. Bojer, who is Professor of this Science at the Royal College, and who reckons among his students many members of the Natural History Society, has, at various of its meetings, imparted his discoveries. A *Hibiscus*, which he found growing wild in the forests of this island, and which has long been cultivated in our gardens, forms the subject of an essay that he has communicated to the Society: this tree was principally observed in the district of the Rivière Noire, on the property of our colleague, M. Genève, and it has received the name of *Hibiscus Genevii*. The *Syphomeris Lingum*, (Bojer, 1.), a genus which M. Bojer established some time ago, and the *Grewia ulmifolia*, a new species, which we equally owe to him, have, as well as the *Tanghinia veneniflua* (*Petit Thouars*), been described and drawn by M. Bojer, with extreme care and exactness. This gentleman has devoted himself to the delineation and description of all the varieties of *Mango* (*Mangifera Indica*, L.), which are so common in the island, and he has collected 70 kinds. It is evident how desirable it is to have a scientific definition and an accurate representation of all the various sorts of a fruit that is so useful to mankind. Mrs. Charles Telfair, Miss Baigrie, and M. E. Duvivier, have assisted M. Bojer in his drawings, and M. Nolin has furnished him with some beautiful fruits that he raised in his plantation at Petite Rivière, where, by means of great skill and perseverance, he has succeeded in making many ingenious experiments, and obtained *Mangoes* and other fruits of a very superior quality.

M. L. Bouton, in a Memoir, bearing for title, *Observations on the Distribution of the Natural Families of Plants in the Island of Mauritius*, has enumerated those which inhabit the summit of the mountains, those which are found on the sea shore, and in different heights and situations. It would appear, according to our colleague's observations, that the *Rubiaceæ*, *Euphorbiaceæ*, *Convolvulaceæ*, *Malvaceæ*, *Byttneriaceæ*, *Sapindaceæ*, *Meliaceæ*, *Orchideæ*, *Gramineæ*, *Cyperaceæ*, and the *Ferns*, constitute the mass of the vegetation of the Mauritius; and that the other natural families only present a very limited number of species. The *Orchideæ* and the *Ferns* generally inhabit the elevated and damp spots, growing under the shade of forests, and they are found at an elevation even of 400 toises (2400 feet). The *Convolvulaceæ*, on the contrary, seem to affect the shores and vicinity of the sea, and are not frequently seen on the high mountains. The *Synanthereæ*, of which the number of species is very limited, only exhibit a few small annual plants that are scattered upon the plains. Some few *Gnaphalia*, *Eupatoria*, *Psiadiæ* and *Conyzæ*, spring up in the forests, and are seen on the heights. It is remarkable that the shrubby *Synanthereæ* commonly prefer the elevated situations, while the herbaceous and annual ones are confined to the valleys.

Our former compatriot, Cossigny, author of several works, and an accurate observer, has pointed out, some time ago, a male *Papaw tree* (*Carica Papaya*, L.), which had borne fruit, and which Commerson had observed on his estate of *Palma*. Quite recently, M. Bouton presented to the Society some *Papaws*, produced by a male tree; and he has imparted some curious details on the subject, and extended his remarks to the whole genus *Carica*, which different botanists, at different periods, have placed in various families.

Finally, M. Bouton read, at the last meeting, a description of two plants, which he found in several spots of our island, and which, appearing to be new, have from him received the names of *Cerastium Mauritianum* and *Ammannia cruciata.*

JULIEN DESJARDINS,

Secretary to the Society.

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### *Extract from the Proceedings of the year* 1831.

BOTANY.—M. L. Bouton has communicated to us in a note some errors which relate to the Botany of our isle, and principally those which exist in the chapter that M. Lesson has edited, in the Zoological part of the voyage of the Coquille. According to our colleague, no kind of *Ixora* or *Cinchona* grows in this island. M. Lesson speaks of a species of *Rhexia*, an evident mistake for *Nuxia.* The errors that crept into the catalogue of plants, printed at Mauritius, in 1822, have been all repeated in M. Lesson's chapter, with provoking fidelity.

The same member has read some observations on the monograph of the *Orchideæ* of the Isle of France and Bourbon, by M. Ach. Richard; and contrary to the opinion of the latter, he maintains that our Flora has more analogy with that of the Continent of Africa than with the Indian Archipelago; still that the resemblance does not hold good with the vegetation of the southern extremity of Africa, but only with that part which lies near the Mauritius, and is equally situated between the tropics; especially the coast of Zanzebar, which has been explored by M. Bojer.

Dr. Lyall has communicated to us verbally several observations on the *Euphorbia splendens* (Bojer), and the *Poinciana regia* (Boj.), which grow at Madagascar, and are now cultivated in all the gardens of Mauritius. He mentioned a yellow flowered *var.* of the first, which he had found at Madagascar. The same member has added 400 species of Madagascar plants to the Society's herbarium.

JULIEN DESJARDINS.

# ENUMERATIO FILICUM,

By R. K. Greville, LL. D. and W. J. Hooker.

[*Continued from p.* 416 *of Vol.* 2.]

## OPHIOGLOSSEÆ.

### 1. Ophioglossum. *Linn.*

*Capsulæ* in spica disticha simplici connatæ, transversim dehiscentes.

1. O. vulgatum. *Linn.*

Radice fibrosa, scapo stipitem terminante, fronde ovata subsessili obtusa reticulata.—*Linn. Sp. Pl. p.* 1518.

Hab. Europe and North America, *Willdenow.* Kamtschatka, *Wormskiold.* Tauria, *Steven.*

2. O. Moluccanum. *Schlecht. Adum. Fil. p.* 9. in nota.—O. simplex. *Rumph. Amb. v.* 6. *p.* 152. *t.* 68. *f.* 2.

Hab. Amboyna, *Rumphius.*—Schlechtendal appears to have established this species from the figure of Rumphius. The *O. sarcophyllum* of Desvaux, (*Prod. p.* 193.) may belong either to this species or the following, for he quotes both plants with a mark of doubt, and does not seem to have any other authority.

3. O. ovatum.

" Fronde ovali acuta reticulato-venosa."—*Sw. Syn. p.* 169. *Bory, Voy. v.* 2. *p.* 206.

Hab. Isle of Bourbon, *Bory de St. Vincent.* Java, *Blume.*—We believe this plant will prove to be a mere variety, or, perhaps, accidental state of *O. reticulatum*, from which it differs in no material points. The venation is said by Bory de St. Vincent to be the same; and in comparing it, which he does, with *O. vulgatum*, he remarks that the frond is more heart-shaped, and the scape shorter. Specimens of *O. reticulatum* answering to this description, and gathered by Sieber in the Mauritius, are now before us. Blume observes that the frond is sometimes oval, rounded and obtuse.

4. O. reticulatum.

Radice fibrosa, scapo elongato stipitem terminante, fronde cordata laxe reticulata.—*Linn. Sp. Pl. p.* 1518.—*Hook. et Grev. Ic. Fil. t.* 20.—O. cordifolium, *Roxb. MS. Cat. Wall. Cat. No.* 47.

α. Fronde acuta.

β. Fronde reniformi-cordata obtusissima.

Hab. West Indies, *Swartz.* Guiana, and the Islands of Bourbon and Mauritius, *Willdenow.* Bengal, *Dr. Wallich.* Java, *Blume.* β. in the Mauritius, *Bouton.*—We are unable to distinguish the *O. cordifolium* of Roxburgh from *O. reticulatum.* There are, however, two states of it distributed by Dr. Wallich: the one having the usual appearance of the species, our variety α.: the other having the frond ovate, scarcely cordate, very acute, of a firmer texture, and browner colour. This agrees in almost every respect with Rumphius' figure (*t.* 68. *f.* 2.), the *O. Moluccanum* of Schlechtendal, and is in all probability the *O. vulgatum* of Roxburgh's MS. Catalogue, which he states to be found in the Moluccas as well as in Bengal.

5. O. petiolatum. *Hook. Exot. Fl. t.* 56.

Hab. Cultivated in the Liverpool Botanic Garden, to which it was communicated from the West Indies. Java, *Blume.*

6. O. ellipticum. *Hook. et Grev. Ic. Fil. t.* 40. O. Surinamense, *Reichenb.*

Hab. Demarara, *Parker.* Surinam, *Weigelt.*—The specimens of *O. Surinamense,* which we have received from Professor Kunze, are considerably smaller, but do not otherwise differ materially from *O. ellipticum.*

7. O. capense. *Schlecht. Adum. p.* 9. *t.* 1. *f.* 2.

" α. *regulare;* fronde ex medio scapo nascente.—O. Lusitanicum. *Thunb. Fl. Cap. p.* 731."

" β. *nudicaule;* fronde versus basin scapi proveniente.—O. nudicaule, *L. Sw. Syn. p.* 397. *t.* 4. *f.* 2."

Hab. Cape of Good Hope, *Thunberg. Mund* and *Maire.* β. on the Table Mountain, *Captain Carmichael.*

8. O. costatum.

Radice fibrosa, scapo elongato stipitem breviorem terminante, fronde lanceolata oblonga uninervi reticulato-venosa.—*R. Br. Prod. Fl. Nov. Holl. p.* 163.

Hab. New Holland, *Brown.* Cape of Good Hope, *Captain Carmichael.*

9. O. Wightii. *Hook. et Grev.*

Radice fibrosa, scapo stipitem subæquantem terminante, fronde ovata medio linea lata pellucida trinervi utrinque reticulata sessili.

Hab. Under the shade of the hedges formed of *Pandanus odoratissimus,* near Negapatam in the Peninsula of India, *Dr. Wight.*

10. O. parvifolium. *Hook. et Grev.*

Radice fibrosa, scapo stipitem subæquantem terminante, fronde ovato-lanceolata acuta sessili opaca.

Hab. The same locality, and growing intermixed with the preceding species, from which it is distinguished by the absence of the remarkable pale central line, and in the narrower, more elliptical, and acute frond.

11. O. Lusitanicum.

Radice fibrosa, scapo elongato stipitem brevem terminante, fronde lanceolata in petiolum decurrente.—*Linn. Sp. Pl. p.* 1518. *Hook. et Grev. Ic. Fil. t.* 80.

Hab. Portugal, *Linnæus.* Tangiers, *Saltzman.* Naples, *Talbot.* Sardinia, *Muller.* Madeira, *Rev. R. T. Lowe.*

12. O. gramineum.

Radice fibrosa, scapo breviusculo stipitem elongatam terminante, fronde lineari-lanceolata sessili.—*Willd. Act. Acad. Erford,* 1802. *p.* 18. *t.* 1. *f.* 1.

Hab. Malabar, *Willdenow.* New Holland, *R. Brown.* Under the shade of *Pandanus odoratissimus,* along with *O. Wightii* and *parvifolium,* near Negapatam, *Dr. Wight.*

13. O. Bergianum.

" Scapis nudis, frondibus radicalibus linearibus angustissimis, radice fasciculata."—*Schlecht. Adumb. p.* 10.

Hab. Cape of Good Hope, on the western side of Senweberg Mountain, *Bergius.*—A remarkable species, not above an inch in height, according to Schlechtendal; the fronds only a third of a line in breadth, the scapes distinct, about the height of the fronds, and bearing a spike a line and a half long, composed of 6–8 capsules.

14. O. tuberosum.

" Radice tuberosa, scapo elongato stipitem brevem terminante, fronde oblongo-lanceolata reticulata in petiolum attenuata."—*Hook. et Arn. in Bot. of Beech. Voy. p.* 53.

Hab. Conception, *Messrs. Lay* and *Collie.*

15. O. bulbosum.

Radice bulbosa, scapo elongato stipitem terminante, fronde subcordato-ovata opaca sessili, spica brevi pauciflora.—*Mx. Fl. Bor. Amer. v.* 2. *p.* 276.—O. crotalophoroides, *Walt. Fl. Carol. p.* 256.?

Hab. Lower Carolina, *Michaux.* Talcahuana, Chili, *Poeppig.* Valparaiso, *Cuming* (*N.* 592.)

16. O. opacum. *Carm.*—*Hook. et Grev. Ic. Fil. t.* 40.

Hab. Tristan da Cunha, *Captain Carmichael.*

17. O. pendulum. *Linn. Sp. Pl. p.* 1518.—*Hook. et Grev. Ic. Fil. t.* 19.

β. Fronde falcata.

Hab. Amboyna and the Mauritius, *Willdenow.* Java and the Molucca Islands, *Blume.* Ceylon, *Col. Walker.* Near Brisbane River, New Holland, *Mr. Allan Cunningham.*—β. Sandwich Islands, *Messrs. Lay* and *Collie,* in Capt. Beechey's Expedition. Wooahoo, *Macrae.*—This species grows in a pendant manner from the trunks of trees, and though a rare species, seems to be widely distributed. Our variety β. has a falcate, more rigid, and apparently more simple frond, as well as a shorter spike.

18. O. palmatum. *Linn. Sp. Pl. p.* 1518. *Plum. Fil. p.* 139. *t.* 163.

Hab. St. Domingo.

### 2. Botryopteris. *Presl.*

*Capsulæ* pedicellatæ liberæ subglobosæ, appendice quadrilobo crenulato marcescente coronatæ, semibivalves, in spica cylindrica verticillatim glomeratæ. *Presl.*

B. Mexicana, *Presl, Reliq. Hænk. p.* 76. *t.* 12. *f.* 1.—Helminthostachys Mexicana, *Spr. Syst. Veg. v.* 4. *p.* 23.

Hab. Mexico, *Hænke.*—The habit of this plant is so entirely similar to that of *Helminthostachys dulcis* of Kaulfuss, that we should almost have considered the two as identical, were it not that the author figures and describes the capsules as pedicellate and solitary, and crowned with a four-lobed appendage, instead of having them combined in a whorl beneath a lobed and peltate scale with which they are united. We have seen no specimen, and therefore retain the genus; adopting with Presl's character.

### 3. Helminthostachys. *Kaulf.*

*Capsulæ* verticillatæ sessiles sub squamam lobatam marcescentem spicam formantem insertæ et cum ea adnatæ.

H. dulcis, *Kaulf. En. Fil. p.* 28.—*Wall. Cat. No.* 54.—Botrychium Zeylanicum, *Sw. Syn. Fil. p.* 172.—Osmunda Zeylanica, *Linn. Sp. Pl. p.* 1519.—Ophioglossum laciniatum, *Rumph. Amb. v.* 6. *p.* 153. *t.* 68. *f.* 3.

Hab. Ceylon and Amboyna, *Rumphius.* Bengal and Tovoy, *Dr. Wallich.* Java, Nusa Cambangan, and the Moluccas, *Blume.*—This is well distinguished from *Ophioglossum*, differing not only in fructification, but remarkably so in its habit. It is exclusively an Asiatic plant, unless, as we suspect, the *Botryopteris* of Presl should prove the same. It is proper to mention, that the figure of the fructification given by Kaulfuss (*En. Fil. t.* 1. *f.* 1.) is incorrect; the peltate scale having been omitted.

### 4. BOTRYCHIUM. *Sw.*

*Capsulæ* distinctæ, sessiles, in spica distiche ramosa dispositæ, transversim dehiscentes.

1. B. simplex. *Hitchcock. Hook. et Grev. Ic. Fil. t.* 82.

HAB. Canada, *Cleghorn.* Saskatchawan, *Drummond.*—Since we gave a figure of this plant in the *Icones Filicum,* we have received other specimens gathered by Mr. Drummond, of considerably larger size, but preserving the same characters.

2. B. Lunaria. *Sw. Syn. Fil. p.* 171.

HAB. Throughout Europe. Iceland, *Paulsen.* In America, at Bear Lake and Carlton House, *Dr. Richardson.* Rocky Mountains, *Drummond.*

3. B. matricarioides. *Willd. Sp. Pl. v.* 5. *p.* 62.—B. rutaceum, var. lunaria? *Schkukr. Fil. t.* 155.

HAB. Northern Europe, Switzerland, and the Pyrenées. In America, from the Saskatchawan to Hudson's Bay, *Drummond.* Newfoundland, *Dr. Morrison.*—Our American specimens of this plant, which seems to be confined to the North of the United States, precisely agree with the figure of Schkukr above quoted, with that of *Flora Danica,* and with what we conceive to be authentic Europæan specimens from Professor Kunze; the latter, however, being smaller than our Canadian ones, and in this respect corresponding with the Newfoundland plant gathered by Dr. Morison. Some authors unite this with the *B. Lunaria,* with which it agrees in the general shape of the pinnules; but in the composition of its frond it is more allied, on the one hand, to *B. lunarioides,* and, on the other, to *B. obliquum.*

4. B. lunarioides. *Sw. Syn. Fil. p.* 172.—B. fumarioides, *Willd. Sp. Pl. v.* 5. *p.* 63.—Botrypus lunarioides. *Mx. Fl. Bor. Amer. v.* 2. *p.* 274.

HAB. Near Charleston, South Carolina, *Michaux. Elliott.*—Our only specimen of this plant, which we received from Mr. Elliott, and which we have every reason to believe to be similar to those of Michaux, from the same country, (Charleston,) is scarcely more than two inches high, including the raceme; the frond is spreading and ternate: the pinnules not numerous, decidedly flabelliform, approaching to lunulate, much and deeply crenato-dentate. We restore the old name of *lunarioides*, as being most appropriate.

5. B. obliquum.

Scapo subradicali elongato fronde subduplo longiore, fronde subtriangulari bi-tripinnata, pinnulis inciso-serratis. *Muhl. in. Willd. Sp. Pl. v.* 5. *p.* 63.—B. lunarioides, *Schkukr. Fil. t.* 157. (*parva*).—B. cuneatum, *Desv. Prod. Fil. p.* 195.

Hab. Pennsylvania, *Muhlenberg. Schweinitz.* South Carolina, *Elliott.* Mississippi, *Teinturier.* Cerro Colorado, Mexico, *Chamisso.*—The composition of the frond is very similar to that of *B. matricarioides*, but it differs in the larger, more decidedly ovate, or oblongo-ovate pinnules, which are also of a more delicate texture. This appears to be a native of the more southern parts of North America, our most northern specimens being from Pennsylvania, the country where Muhlenberg first discovered it.

6. B. ternatum. *Sw. Syn. Fil. p.* 172.—Osmunda ternata. *Thunb. Fl. Jap. p.* 329. *t.* 32.

Hab. Japan, *Thunberg.*

7. B. subcarnosum.

Scapo subradicali, fronde subternata bipinnata, pinnis elongatis foliolis ovatis obtusis inciso-crenatis subcarnosis, racemis decompositis.—*Wall. Cat. No.* 49.

Hab. Nepal, *Dr. Wallich.*—This is very nearly indeed allied to some specimens in our possession of *B. obliquum*, having more than usually divided fronds. It differs, however, in its much larger size—a foot to a foot and a half in height—its longer pinnæ, and more ample fructification. Again, it agrees so well with the *B. ternatum* of Swartz, that it may possibly be identical.

8. B. dissectum. *Muhl.—Spr. Anl. v.* 3. *p.* 172.—*Syst. Veg. v.* 4. *p.* 23.

Hab. Pennsylvania and Florida, *Muhlenberg.*—This appears to be a distinct species, distinguished by the linear dichotomously divided segments. We have received specimens from Dr. Torrey, but without any particular station attached to them. *B. gracile* of Pursh, which Sprengel refers to this place, belongs to *B. Virginicum.*

9. B. cicutarium. *Sw. Syn. Fil. p.* 171.—*Plum. Fil. t.* 159.

Hab. St. Domingo, *Plumier.*—Chamisso and Schlechtendal doubt if this plant ought not to be considered a variety of *B. Virginicum.*

10. B. Virginicum. *Sw. Syn. Fil. p.* 171.—B. gracile, *Ph. Fl. Am. Sept. p.* 656.—Osmunda Virginica, *Linn. Sp. Pl. p.* 1579.

β. *Mexicanum ;* fronde coriaceo-membranacea opaca, pinnulis latioribus minus profunde pinnatifidis.—B. Virginicum, *Schlecht. in Linnæa, v.* 5. *p.* 621.

Hab. Canada to Carolina. Rocky mountains, *Drummond.* Columbia, *Garry.* β. woods at Jalapa, Mexico, *Chamisso.* Rigla (Mexico), *Captain Vetch.*—This is the largest of the American species, and a very elegant plant. The *B. gracile* of Pursh does not differ, except in the smaller size, and corresponding delicacy of the frond. It has been communicated to us by Dr. Torrey, who likewise considers it as a variety of the present species.

11. B. australe, *Br. Prod. Fl. Nov. Holl. p.* 164. *Sieb. Fl. Mixta, No.* 266.

Hab. New Holland, *Brown. Sieber.*—This comes very near to the preceding, in the size, habit, and other characters.

12. B. lanuginosum.

Scapo stipitem elongatam inferne incrassatam lanuginosam terminante fronde breviore, fronde tripinnata ampla, pinnulis ovato-lanceolatis membranaceis profunde pinnatifidis segmentis ovato-oblongis incisis.—*Wall. Cat. No.* 48.—*Hook. et Grev. Ic. Fil. t.* 79.

Hab. Nepal, *Dr. Wallich.*—Of this plant we gave a figure from very small specimens in the *Icones Filicum.* More perfect ones, which we now possess through the kindness of Dr. Wallich, are a foot or more in height, with an ample frond exceeding the raceme in length. In general the insertion of the scape is above the lower primary division of the frond. In these characters, therefore, and in the woolly base of the stipes, the plant differs from the *B. Virginicum.*

13. B. daucifolium. *Wall. Cat. No.* 49.—*Hook. et Grev. Ic. Fil. t.* 161.

HAB. Nepal, *Dr. Wallich.*

14. B. silaifolium. *Presl. Reliq. Hænk. p.* 79.

HAB. Nootka Sound, *Hænke.*—A very distinct species, as appears from the description. The frond solitary, tripinnate, with a cordato-ovate outline, about a foot in height. The scape naked, of the same height as the frond. The fructification forming a branched secund panicle.

## MARATTIACEÆ.

### 1. MARATTIA. *Sw.*

*Receptacula* dorsalia submarginalia ovalia fornicata superne longitudinaliter dehiscentia. *Capsulæ* in duplicem seriem connatæ interius rima hiantes.

1. M. alata. *Sm. Icon. Pl. Ined. t.* 46.

HAB. Jamaica, *Swartz.* Guadaloupe, *Parker.* Wooahoo, *Macrae.* Sandwich Islands, *Messrs. Lay* and *Collie* in Captain Beechey's Expedition.

2. M. lævis, *Sm. Icon. Pl. Ined. p.* 47.

HAB. Dominica, *Swartz.* Brasil, *Macrae.*—This is distinguished from *M. alata* by its more delicate texture, brighter green colour; by the pinnules being deeply lobed at the margins, so as to be actually pinnatifid, the segments or lobes blunt, occasionally toothed, the teeth always very obtuse. We have it only from Brasil, gathered by Raddi, (and it consequently is his *M. alata α.* and *β.*—the latter being only distinguished by the absence of chaffy scales,) and by Macrae. It is likewise the *M. lævis* described by Kaulfuss. We have never seen it from the West Indies. Smith's figure is certainly not characteristic.

3. M. sambucina. *Blume, En. Pl. Jav. p.* 256.

Hab. Java, *Blume.*—The author observes of this plant that it differs from *M. lævis* of Smith, in the pinnules being acutely serrulate, not inciso-serrate.

4. M. sylvatica. *Blume, En. Pl. Jav. p.* 256.

Hab. Java, *Blume.*—Blume remarks that this only differs from *M. sambucina* in the frond being triplicato-pinnate, with the pinnules coarsely serrated, and from *M. alata* in the appressed serratures and smooth rachis.

5. M. fraxinea. *Sm. Icon. Pl. Ined. t.* 48.

Hab. Mauritius, *Thouin.* Isle of Bourbon, *Willdenow.*—"Common in the Woods of Mauritius and Bourbon. This is among the most beautiful of the whole order. The stem is a scaly placentiform bulb, from six to twelve inches in diameter, sending off numerous cord-like fibres, which penetrate deep into the earth. The scales are fleshy, two to three inches broad, with a deep indenture in each, wherein the base of the decayed frond had lodged. These scales retain their sap as long as the plant continues to exist, and serve probably to supply its demands during the dry season. The fronds are developed one by one. They are of a cordate outline, from two to six feet high, bipinnated; the pinnæ opposite, from two to seven pair, with or without a terminal one. The leaflets are alternate, lanceolate, acute, serrulate, marked with parallel veins, simple or bifid. The partial rachis is slightly winged, jointed at the base, the joints tumid, but shrinking on exsiccation." *Carmichael, MSS.*—The *M. oppositifolia* of Smith in *Rees' Cyclopædia,* appears to be a narrow and opposite-leaved variety.

6. M. sorbifolia. *Sw. Syn. Fil. p.* 168. Myriotheca sorbifolia, *Bory, Voy.* 1. *p.* 266.

Hab. Isle of Bourbon, *Bory de St. Vincent.*—According to Bory, this is distinguished by its alternate, not opposite, pinnæ, and narrower pinnules. The breadth of the latter we know to vary exceedingly; but in regard to the former particular, our specimens are not of sufficient length to enable us to come to any conclusion. But since the pinnules vary in regard to their situation, it is probable that the pinnæ do so likewise.

7. M. salicifolia. *Schrad. in Gœtting. Gel. Anz.* 1818, *p.* 920.

HAB. Cape of Good Hope, *Mund* and *Maire.* This species, which is characterized as having the pinnæ opposite, is, by Sprengel, united with *M. sorbifolia* (pinnis alternis). We can truly say that some of our narrow leaved specimens of the Mauritius *M. fraxinea* entirely correspond with Schlechtendal's description in his *Adumbrationes.*

8. M. salicina. *Sm. in Rees' Cyclop.*

HAB. New Holland? *Robert Molesworth, Esq.* We possess an imperfect specimen of this plant from Sir J. E. Smith, and on comparing it with our narrow-leaved varieties of *M. fraxinea,* we find it to differ in nothing except in the presence of copious hair-like scales at the base of the midrib.

9. M. attenuata. *Labill. Sert. Austro-Cal. p.* 9. *t.* 13 *et* 14.—
M. acuminata, *Willd. Herb.*—*Kaulf. En. Fil. p.* 33.

HAB. New Caledonia, *Labillardiére.*—According to Labillardiére's character, this differs in its triplicato-pinnate frond, and, judging from the figure, in the smaller number of leaves (5–8) upon each pinna, from *M. fraxinea,* which has 30–40 upon each pinna.

10. M. cicutæfolia. *Kaulf.*

Frondibus bipinnatis pinnis alternis vel oppositis, pinnulis lato-lanceolatis sensim attenuatis membranaceis grosse serratis, receptaculis in lineam interruptam dispositis a margine distantibus.—*Kaulf. En. Fil. p.* 32.—M. fraxinea, *Rad. Fil. Bras. p.* 74. *t.* 82.

HAB. Brazil, *Raddi. Macrae. Captain Carmichael.*—This, which was confounded with *M. fraxinea* by Professor Raddi, is abundantly distinct, in having the foliage of a much more thin and delicate texture, the margins from the base to the extremity strongly serrated with sharp teeth, and, what is more remarkable, in the receptacles being placed in very much interrupted lines, at a considerable distance from the margin. The receptacles have also a more complete fissure for their whole length, and consequently they open wider than those of *M. fraxinea.* It appears to be exclusively a native of Brazil, from whence we possess specimens from Professor Raddi, Mr. Macrae, and the late Captain Carmichael.

## 2. Angiopteris. *Hoffm.*

*Sori* oblongi, transversi, in lineam submarginante confluentes. *Capsulæ* discretæ, duplici serie dispositæ, ellipticæ, subcompressæ, poro antice dehiscentes.

1. A. evecta. *Hoffm.*

Fronde bipinnata, pinnulis oblongo-lanceolatis acuminatis (acumine sterili) serratis basi subcuneato-truncatisve, venis opacis simplicibus furcatisve intermediis nullis, soris marginalibus dense approximatis.—*Hoffm. in Comm. Gœt. v.* 12. *p.* 29. *t.* 5. *Hook. et Grev. Ic. Fil. t.* 36.—A. Indica, *Desv. Journ. Bot. v.* 1. *p.* 267.—A. crassipes, *Wall. Cat. No.* 187.

Hab. Islands of the Pacific Ocean. East Indies, *Dr. Wallich.* Ceylon, *Dr. Emerson.* Java, *Dr. Blume.*—We are unable to trace any permanent difference between the various states of this plant that have been noticed by authors. Our friend Dr. Wallich himself doubts whether his *A. crassipes* be distinct. Blume, in his *Enumeratio Plantarum Javæ,* describes three varieties, each of which he is almost inclined to consider as a separate species. Of these we have seen no authentic specimens.

2. A. longifolia (*Grev. et Hook.*)

Fronde bipinnata, pinnulis longe lineari-lanceolatis acuminatis breviter obtusissime dentatis basi cordatis, venis simplicibus furcatisve aliis simplicibus pellucidis tenuibus alternantibus, soris remotiusculis ad summum apicem pinnularum attingentibus.

Hab. Pitcairn's and Society Islands, *Mr. Mathews* (*N.* 2.) —If this be examined with a little attention, it can never be confounded with the preceding species. The pinnules are nearly twice as long, much narrower, and, at the same time, more gradually attenuated: the margin is very broadly and obtusely toothed (not serrated), the sori are placed at some little distance from the margin, remote from each other; the capsules are larger, more rounded at the apex, with a shorter and blunter orifice; but the most striking points of difference are to be found in the sori occupying the whole of the acuminated apex of the pinnules, and in the nerves, which are much wider apart than in *A. evecta*, while there is a slender, but very evident, pellucid simple nerve, extending from the sinus of the teeth, and terminating near the midrib. Mr. Mathews remarks that the fronds are 6–7 feet in height.

### 3. DANÆA. *Sm.*

*Sori* lineares, dorsales, transversi, paralleli. *Capsulæ* in series geminatas arcte connatæ, superne poro dehiscentes. *Indusium* superficiarium soros cingens.

1. D. simplicifolia. *Rudge, Ic. Pl. Guian. t.* 36.

HAB. Guiana, *Rudge.*

2. D. elliptica. *Sm. in Rees' Cyclop.—Hook. et Grev. Ic. Fil. t.* 52.—D. geniculata, *Rad. Fil. Bras. p.* 75. *t.* 5.

HAB. West Indies, Jamaica, *Sloane. Smith.* St. Vincent, *Rev. R. Guilding.* Dominica, *Dr. Kraus.* Brazil, *Raddi.*—Sprengel has referred *D. geniculata* of Raddi to the *D. nodosa,* without, apparently, being aware of *D. elliptica* of Smith, with which it exactly agrees.

3. D. alata. *Sm. in Act. Taur. v.* 5. *p.* 420.—*Hook. et Grev. Ic. Fil. t.* 18.

HAB. West Indies. St. Vincent, *Rev. L. Guilding.* Jamaica, *Messrs. Lunan, Wiles,* and *Higson.* Dominica, *Dr. Kraus.*

4. D. nodosa. *Sm. in Act. Taur. v.* 5. *p.* 420.—*Hook. et Grev. Ic. Fil. t.* 51.—D. longifolia, *Desv. Journ. Bot.* 1813. *p.* 267.

HAB. West Indies. Jamaica, St. Domingo, Martinique, and in the Caraccas (*Willd.*) St. Vincent, *Rev. L. Guilding.* Dominica, *Dr. Kraus.*

5. D. (?) paleacea, *Rad. Fil. Bras. p.* 76. *t.* 5. *f.* 2.

HAB. Brasil, *Raddi.*—Professor Raddi appears to have seen the fertile frond of this plant, but the pinna (a sterile one being the only portion figured) is described and represented as reticulated with veins;—a structure so much at variance with the genus, that we can hardly believe it to form a true species of it.

### 4. KAULFUSSIA. *Blume.*

*Sori* orbiculares, sparsi. *Capsulæ* stellatim connatæ, superne longitudinaliter hians. *Indusium* nullum.

1. K. æsculifolia. *Blume, En. Pl. Jav. p.* 260.—*Kaulf. in Hook. et Grev. Ic. Fil. t.* 229.

HAB. Java, *Reinwardt.*

## OSMUNDACEÆ.

### 1. OSMUNDA. *Linn.*

*Capsulæ* globosæ, pedicellatæ, reticulatæ, a basi ad gibberem dorsalem pellucidum usque dehiscentes, in paniculam vel ad marginem frondis dispositæ.

† *Fronde foliosa fructificante.*

1. O. Claytoniana. *Linn. Sp. Pl. p.* 1521.

HAB. Virginia, *Clayton.*—Pursh is of opinion that this is only a variety of *O. cinnamomea,* having the lower pinnæ unchanged into fructification. We have the same appearance on a specimen of *O. cinnamomea.*

2. O. interrupta, *Mich. Fl. Bor. Amer. v.* 2. *p.* 273.

HAB. North America.

3. O. pilosa. *Wall.*

Frondibus ovato-lanceolatis pinnatis (junioribus densissime ferrugineo-lanatis) pinnis lanceolatis obtusis arcte profunde pinnatifidis segmentis oblongis obtusis integerrimis, medium versus vel ad apicem fructificantibus, capsulis nigricantibus. —*Wall. Cat. No.* 52.

Hab. Rio Janeiro, *Dr. Wallich.*—This is very closely allied to *O. interrupta* of North America, which differs, however, from it, as seen in our herbaria, in its glabrous fronds; but, if we are not mistaken, the latter is covered in a young and recent state with a ferruginous down, in which case we scarcely know how the present plant is to be distinguished, except by its larger size, and denser pinnæ, the lower ones being more approximated to the rachis.

4. O. regalis. *Linn. Sp. Pl. p.* 1521.

Hab. The northern parts of Europe.—This beautiful plant is sometimes found growing to a very large size. A specimen was observed by Mr. Stewart Murray on the banks of the Clyde above eleven feet in height.

5. O. spectabilis. *Willd. Sp. Pl. v.* 5. *p.* 98.—O. regalis, *Mich. Fl. Bor. Amer. v.* 2. *p.* 273.—O. regalis *β.*, *Linn. Sp. Pl. p.* 1521.

*β. Brasiliensis:* fronde rigidiore.

Hab. Canada and the United States. *β.* Organ Mountains, Brazil, *Swainson.*—Our specimens from the southern states are larger than those from the north, and have their pinnules longer and narrower. The variety *β.* is more rigid, and the general outline more linear.

6. O. Hilsenbergii. *Hook. et Grev.*

Frondibus bipinnatis, pinnulis lineari-oblongis obtusis integris obscure crenulatis sæpissime fusco-punctatis, panicula terminali bipinnata, pinnulis lineari-elongatis.

Hab. Island of Madagascar, *Mr. Hilsenberg. Professor Bojer. Dr. Lyall* (*No.* 300.)—This graceful species is distinguished by its lax panicle, whose pinnules are very slender and as long as the pinnules of the sterile portion of the frond. It is most nearly allied to the *O. speciosa* of Wallich.

7. O. speciosa. *Wall.*

Frondibus bipinnatis, pinnulis oblongo-lanceolatis acutis serrulatis, panicula terminali bipinnata, pinnulis lineari-oblongis (subferrugineis).—*Wall. in Herb.* 1823.—*Cat. No.* 50.

Hab. Nepal and Sirnugur, *Dr. Wallich.*—The pinnules are sometimes nearly three inches in length, and, like *O. spectiblis,* destitute of auricle.

8. O. obtusifolia, *Willd. Herb.*—*Kaulf. En. Fil. p.* 43.

Hab. Mauritius, (*Willd.*) *Captain Carmichael.* Madagascar, *Mr. Hilsenberg. Professor Bojer. Dr. Lyall* (301).

9. O. Javanica. *Blume, En. Pl. Jav. p.* 252.

Hab. Java, *Dr. Blume.* Kandy, in Ceylon, *Col. Walker.* China, *Rev. Mr. Vachell.*—A very remarkable species, simply pinnate, the pinnæ rigid, petiolate, linear-lanceolate, acuminate, entire, or repando-crenate.

† † *Fronde fructificante a sterili diversa.*

10. O. cinnamomea. *Linn. Sp. Pl. p.* 1522.

Hab. Canada and the United States.

11. O. Japonica. *Thunb. Fl. Jap. p.* 330.

Hab. Japan, *Thunberg.*

12. O. lancea. *Thunb. Fl. Jap. p.* 330.

Hab. Japan. *Thunberg.*—We have seen no specimens of this and the preceding species.

### 2. TODEA. *Willd.*

*Capsulæ* globosæ, pedicellatæ, reticulatæ, gibbere (vel annulo) dorsali pellucido, lateraliter dehiscentes, venulis frondis infer. insidentes. *Spreng.*

1. T. Africana. *Willd. in Schrift. Acad. Erf.* 1802. *p.* 14. *t.* 3. *f.* 1.—Osmunda totta, *Sw. in Schrad. Journ. Bot.* 1800. *p.* 105.—O. barbara, *Thunb. Prod. p.* 171. *Br. Prod. p.* 163.

Hab. Cape of Good Hope, *Thunberg.* New Holland, *R. Brown.*

2. T. Fraseri. *Hook. et Grev. Ic. Fil. t.* 101.

Hab. New Holland, *Fraser.*

3. T. pellucida. *Carm.*

Frondibus bipinnatis membranaceis, pinnulis oblongo-lanceolatis profunde pinnatifidis segmentis linearibus acutis integris vel bifidis, pinnarum rachi subtus hirsuta.—*Carm. MSS.*

Hab. Banks of the Cowa Cowa, New Zealand.—This is, in all probability, the species alluded to by Mr. Brown at page 163 of his *Prodromus*, and which we have noticed at *t.* 101. of our *Icones Filicum*, when speaking of *Todea Fraseri*, a plant allied to this in its habit and texture, but abundantly different as a species.

[TAB. CVII.]

## ON A NEW SPECIES OF SAROTHRA OF LINNÆUS, WITH SOME OBSERVATIONS ON THE GENUS AND ITS AFFINITIES.

By R. K. Greville, LL. D. and W. J. Hooker.

Whilst engaged in looking over an extensive collection of plants, gathered by Mr. Drummond upon the Missouri, near St. Louis, we were much struck with the appearance of a plant having the habit of *Sarothra*, but whose larger foliage seemed to give it an equal claim to be considered an *Hypericum.* In seeking for characters to distinguish this new plant, which we soon found to be a true *Sarothra*, from the only hitherto known species, *S. gentianoides*, we were naturally led to inquire into its right to a station among the *Gentianeæ*, where many Botanists have placed the genus, or among the *Frankeniaceæ*, to which the excellent Auguste St. Hilaire has referred it;—most modern Botanists, apparently, having agreed to discard it from *Hypericineæ;* though some, and those who have had opportunities of investigating the genus in a recent state, assert its claims to the latter order, and (not without reason), even to a place in the genus *Hypericum* itself.

Linnæus, relying perhaps too much on the habit of some small specimens, which resemble *Exacum filiforme*, and still more *Andrewsia paniculata*, referred it to his *Rotatæ; Gentianeæ* of Juss. Jussieu himself included it in the *Caryophylleæ* in his genera Plantarum: but in his Mémoire sur les *Hypericées*, in the 20th vol. of the *Mém. du Mus.* he says that *Sarothra* may perhaps be referred to this order; and he alludes to the relation which Richard and Michaux have considered it to bear with *Hypericum*, from which, continues M. de Jussieu, "it nevertheless differs by its stamens in a definite number (5–10), and by the attachment of the seeds to the margins of the valves, as in the *Gentianeæ*, to which, if it were monopetalous, it would be farther allied by its habit and by the perisperm which Gærtner has attributed to it." De Candolle has not included it in any of the orders of the *Thalamifloræ*: from which it may be inferred that that eminent Botanist intends to place it among the *Gentianeæ*. Nuttall, in his "*Genera of North American Plants*," where he has paid much attention to their natural affinities, observes, "that this plant is closely allied to *Hypericum*, and scarcely in any respect like a *Gentian*, its affinity to that genus being entirely fanciful." In the 2d vol. of the *Mém. du Mus.* M. St. Hilaire is disposed to transfer *Sarothra* to *Violarieæ*, on account of the definite stamens, the nature of the perisperm, the position of its embryo, and its seeds fixed to the inner wall of the capsule: notwithstanding that in *Viola* the seeds are attached to the middle of the valves, whilst here the insertion is at the margin. Our author, in a subsequent treatise in the 3d vol. of the *Mém. du Mus.*,—taking this latter character into account,—unites *Sarothra* with *Frankenia* and *Sauvagesia*, in order to constitute the groupe of *Frankeniaceæ*; and in a note he remarks, "En traitant de ce groupe, J'avais éloigné toute idée de faire du *Sarothra* un *Hypericum*; cependant il existe entre ces genres un trait de ressemblance qui aura decidé le Botaniste célèbre dont la plume savante a, dit-on, été empruntée souvent par l'auteur du *Flora* Americæ Borealis. Dans une suite d'*Hypericum* indigènes de la France, J'ai observé toutes les dègradations possibles entre la capsule évidemment pluriloculaire avec insertion *axile* (*Rich.*) et le fruit uniloculaire accompagné de l'insertion suturale, caractères communs au *Sarothra* et à l'*Hypericum elodes.* Cependant la *Sarothra* différera toujours essentiellement des *Hypericum* par ses étamines en nombre déterminé, par son style et son stigmate unique, et enfin parcequ'il a bien certainement un périsperme, tandis que J'ai reconnu l'absence de ce corps dans tous lec *Hypericum* dont j'ai disequé la semence."—The wonder is, that so accurate a Botanist as M. de St. Hilaire should have overlooked 2 out of the 3 styles, which most assuredly exist in this plant, which may be seen even with the naked eye, and which almost every Botanist who has mentioned the plant describes. It is to be regretted that neither Mr. Lindley nor Mr. Arnott in their Treatises on the Natural Affinities of Plants, have alluded to this genus; so that we are ignorant of their ideas respecting it. In the *Nouveau Dictionnaire des Sciences Nat.*, we are told that the genus *Sarothra* has been suppressed and incorrectly united to *Hypericum*, "dout il trés éloigné:" but without any information as to its right place in the Natural Method. In the *Dict. Class. d' Hist. Nat.*, it is merely stated that the *Sarothra gentianoides* "had been placed among the *Caryophylleæ* by Jussieu, who, however, indicated its relation to the *Gentianeæ:* but that the elder Richard having examined the plant with care, determined it to belong to *Hypericum.*" Sprengel refers it to *Cistoideæ* in his edition of the *Genera Plantarum* of Linnæus; Bartling, in his *Ordines Naturales Plantarum*, to *Hypericeæ:* and, lastly, Torrey, in his "Catalogue of North American Genera of Plants, arranged according to the Orders of Lindley's Introduction to the Nat. Syst. of Botany," refers it to *Hypericum* itself.

Amid so many conflicting opinions, it became the more necessary to judge for ourselves, and to submit our specimens to a minute examination, of which, (allowance being made for the circumstance of our only being able to have recourse to species in a dried state,) the following is the result:—

### SAROTHRA. *Linn.*

*Cal.* profunde 5-partitus, persistens, segmentis lanceolatis, subinæqualibus, 3-striatis, erectis, appressis, acuminatis. *Petala* 5, lineari-oblonga, lutea, erecto-patentia, obtusa vix unguiculata, striata, tenui-membranacea, persistentia, segmentis calycinis alternantia, siccitate ab apice involuta. *Æstivatio* spiralis. *Stamina* hypogyna, libera, definita? 5–20 (an plura?), persistentia. *Filamenta* gracilia pistilli longitudine. *Antheræ* subrotundæ, biloculares, longitudinaliter dehiscentes. *Pistillum* solitarium. *Germen* oblongum vel ovatum uniloculare obscure longitudinaliter 3-sulcatum, superne præcipue. *Styli* 3, erecto-flexuosi, filiformes, demum reflexi, germine $\frac{1}{3}$ breviores. *Stigmata* globosa. *Capsula* coriaceo-membranacea, oblonga vel ovata, staminibus petalis calyceque persistentibus circumdata, stylisque reflexis terminata, unilocularis, polysperma, semi-trivalvis. *Semina* 14–20 ad margines suturæ longitudinaliter inserta, elliptica, pallide luteo-fusca, lineis elevatis punctisque intermediis notata, majuscula. *Podospermum* breve. *Integumentum* crustaceum. *Albumen* carnosum. *Embryo* centralis, immersus. *Radicula* ad hilum seminis versa—Herbæ *parvæ, annuæ, erectæ, rigidæ, glanduloso-punctatæ, punctis pellucidis, supra basin pluries dichotome ramosæ.* Rami *graciles, erecti, acute 4-anguli.* Folia *parva, linearia vel subulata, opposita.* Flores *in ramis vel in ramulis brevibus terminales; nunc inter dichotomia ramorum subsessiles.*

From this description, it will appear that *Sarothra* is, in many respects, closely allied to *Hypericum*, differing, however, remarkably from the character hitherto given of that genus, in the internal organization of the capsule: and not only of that genus, but of the whole order, as detailed by De Candolle, "*Capsula bacca* ve multivalvis multilocularis; loculi numero stylos æquantes. *Placenta* integra centralis seu multipartita margini introflexo valvularum adfixa." We were naturally led to examine if all the *Hyperica* had the "central

placenta," and upon dissecting the capsule of the first species which we selected, *H. parviflorum*, we found, that not only was the capsule, but also the germen, perfectly free from any placenta, and entirely unilocular: and we afterwards ascertained that Auguste St. Hilaire had discovered that the same structure existed in *Hypericum elodes*. In *H. parviflorum*, too, we observe the stamens not to be numerous; and, as far as we could judge from our inspection of dried specimens, all of them free to the base. If, then, the habit of the plant be also considered, there can be no question of the propriety of *Sarothra* being arranged with the *Hypericineæ:* and the only doubt remaining upon our minds is, whether it ought not to be united with the genus *Hypericum: H. parviflorum* being exactly the connecting link. Taking, however, into account the mode of growth of our plant, its erect, rigid, dichotomous ramification, small leaves, fewer and larger seeds, narrow petals and the smaller number of stamens, we, for the present, retain the genus; whose 2 species we thus define;

1. *S. gentianoides;* ramosissima, foliis subulatis minutissimis appressis, segmentis calycinis subæqualibus capsula lineari-oblonga duplo brevioribus.—*Linn.*

Hab. Canada and the United States.

Some of our species of this plant, gathered by Dr. Wray of Augusta, are from 12 to 16 inches tall, and from their copious wiry stems afford an illustration of the fitness of the generic name, from *σαρωθρα, a Broom.*

2. *S. Drummondii;* ramosa, foliis linearibus obtusis, segmentis calycinis erecto-patentibus inæqualibus capsula ovata duplo fere longioribus. (Tab. CVII.)

Hab. Near St. Louis, on the Missouri. *Drummond.*—This is far less branched than the last, less slender, with much longer leaves and flowers, and, at first sight, bears no inconsiderable resemblance to *Linum Virginicum.* The exact number of stamens is very difficult to ascertain in the dried states of the plant; but we have distinctly counted as many as 19 in a flower. The inequality of the segments of the calyx, and their great length in relation to that of the ovate capsule, together with the different foliage, afford abundant characters for distinguishing the present from the preceding species.

TAB. CVII. *Fig.* 1. Flower. *Fig.* 2. Stamens and pistil. *Fig.* 3. Capsule, surrounded by its floral coverings. *Fig.* 4. Capsule, with its valves burst. *Fig.* 5. Section of do. *Fig.* 6. Seed. *Fig.* 7. Section of do. *Fig.* 8. Leaves. *Fig.* 9. Section of the stem:—all, more or less, *magnified.*

[TAB. CVIII. AND CIX.]

ON

## CARDAMINE RHOMBOIDEA AND C. ROTUNDIFOLIA OF NORTH AMERICA.

HAVING fallen into an error in the *Flora Boreali-Americana*, in considering the *Cardamine rotundifolia* of Michaux? and Dec., and *C. rhomboidea* Dec. (*Arabis rhomboidea* and *tuberosa*, Pers.) the same species, I gladly avail myself of the pages of the *Botanical Miscellany* to correct this mistake, and to acknowledge my obligations to Dr. Darlington of New Chester, Pennsylvania, for directing my attention to the subject, which he has done in the 18th vol. of Silliman's American Journal of Science, p. 356: where, likewise, that accurate Botanist has clearly defined the essential characters of the two plants. The following remarks and the accompanying figures, will, I trust, still further assist in elucidating the subject.

Although, however, I am quite satisfied that I have included the synonyms of the two species in the Flora just mentioned; yet the specific character exclusively applies to one, the *C. rhomboidea*, Dec., which alone, as far as I know, is a native of British N. America: and I must confess myself to be still in doubt whether this may not be the original *rotundifolia* of Michaux. The character given by that author (*Fl. Am.* v. 2.

*p.* 30.) is equally applicable to the one species as to the other, correctly to neither: "*C. rotundifolia,* caulibus simpliciusculis debiliter procumbentibus, foliis omnibus simpliciculis suborbiculatis integriusculis." Some years ago, Dr. Boott's specimens of *C. rhomboidea,* Dec., were compared with Michaux's Herbarium, and pronounced by Richard himself to be the *C. rotundifolia,* Mich.,—as certified upon the paper containing the specimens. It was from these facts that I was led to consider the two species identical in my Flora; and I should have continued in error were it not for Dr. Darlington's criticisms, and for beautiful specimens of the two plants which I received from Dr. Darlington, along with many other rarities, through the kindness of my inestimable friend Dr. Boott. Persoon has made no alteration in the specific character of Michaux's *C. rotundifolia;* but under the genus *Arabis* he has given the *C. rhomboidea* of De Candolle; according to this latter author under two names: " *A. rhomboidea,* foliis glabris rhomboideis, infimis longe petiolatis, radice tuberosa;" and "*A. tuberosa,* caule simplice, foliis lato-lanceolatis dentatis inferioribus subpetiolatis, radice tuberoso-fibrosa." The former of these two specific names (though, in my opinion, by far the least appropriate,) has been adopted by De Candolle for this the tuberous-rooted kind, which he has rightly referred to *Cardamine;* and this species is followed, first, in the *Systema Vegetabilium,* and, 2dly, in the *Prodromus,* by the *C. rotundifolia,* with the amended character, " foliis orbiculatis subdentatis glabris petiolatis, caulibus debilibus procumbentibus, radice fibrosa." Nuttall has quoted the *C. rotundifolia* of Mich., but doubtfully, as a synomyn to *A. rhomboidea.* Pursh has a *C. rotundifolia* of Mich., and an *Arabis rhomboidea* of Persoon, copying the characters of the respective authors verbatim, and offering no remarks. Dr. Bigelow has adopted the *Arabis rhomboidea* of Persoon, and given a good description. That author's "*C. rotundifolia,* Mich." is given, with a mark of doubt, as the true plant of Michaux, and is in reality a very different species (*C. bellidofolia*), inhabiting the highest summit of the White Mountains. The latest work on American Botany that I have the opportunity of consulting, is the *Florula Cestrica* of Dr. Darlington, who keeps up the *C. rhomboidea* (under *Arabis*) and *C. rotundifolia*, and well distinguishes them: yet remarks that Dr. Muhlenberg seemed to think that Michaux's description of the latter plant was intended for the former; but declaring his own opinion and that of Dr. Torrey to the contrary. The question of the identity of Michaux's plant, however, can only be set at rest by a careful examination of the original specimen. It will be seen that Richard pronounced Dr. Boott's specimen of *C. rhomboidea* to be the *C. rotundifolia* of Michaux; while the equally learned De Candolle, who has, in all probability, seen Michaux's original specimens in the Herbarium at Paris, considers these latter to be the same with his *C. rotundifolia*. His authority, in this case of doubt, it will be safest to follow, especially as his ideas are now generally adopted.

1. Cardamine *rhomboidea;* caule simplici erectiusculo, foliis simplicibus inferioribus longe petiolatis rotundato-cordatis integerrimis vel subsinuatis caulinis superioribus ovalibus sinuato-dentatis supremis lanceolatis sessilibus, radice tuberosa. (Tab. CVIII.)—Cardamine rhomboidea. *De Cand. Syst. Veget. v.* 2. *p.* 246. *Ejusd. Prodr. v.* 1. *p.* 149. *Spreng. Syst. Veget. v.* 2. *p.* 885.

Arabis rhomboidea. *Pers. Syn. Pl. v.* 2. *p.* 204. *Pursh. Fl. Am. v.* 2. *p.* 437. *Nutt. Gen. Am. v.* 2. *p.* 70. *Elliott, Carol. v.* 2. *p.* 149. *Bigel. Fl. Bost. ed.* 2. *p.* 252. *Darlingt. Florul. Cestrica, p.* 74.

Arabis tuberosa. *Pers. Syn. Pl. v.* 2. *p.* 204.

Arabis bulbosa. " *Muhl. Cat. n.* 104."

Cardamine rotundifolia. *Hook. Fl. Bor. Am. v.* 1. *p.* 44. (excl. syn. prior., Michauxii? Candollii et Purshii.)

Nasturtium Virginianum Cochleariæfolio flore albo ampliore. *Pluken. Amalth. t.* 435. *f.* 6.

" Arabis foliis ovatis denticulatis glabris. *Gron. Virg. p.* 99."

*Radix* e *tuberibus* nunc solitariis plerumque plurimis congestis,

magnitudine seminis *Pisi sativi*, albis, farinaceis, fibris numerosis capillaribus immixtis. *Caulis* erectus vel basi solummodo nonnunquam magis minusve decumbens, flexuosus, palmaris ad pedalem, simplex vel superne rarissime divisus, glaber, in examplaribus septentrionalibus a Drummondio lectis, pubescenti-hirsutus, superne præcipue foliosus. *Folia* remota; *radicalia* (plurima) et *caulina inferiora* longe petiolata orbiculari-cordata, sinu profundiusculo, integerrima vel margine læviter sinuata: *superiora* seu intermedia, brevius petiolata, ovalia seu elliptica, sinuato-dentata; *suprema* sensim minora, magis elongata, profundius dentata, omnino sessilia: omnia glabra subsucculenta. *Flores* corymbosi, magnitudine et colore *C. pratensi*. *Calyx* glaber, nonnunquam, ubi caulis pubescens, pedicellique hirsuti, pilis raris sparsi. *Petala* obovato-cuneata, inferne in unguem attenuata. *Fructus* immaturus lineari-attenuatus, gracilis, patens, stylo elongato terminatus.

HAB. Borders of rivulets and springs, probably throughout the whole length of North America; in the Southern States, as in the upper districts of Carolina and Georgia (*Elliott*); banks of the Mississippi (*C. S. Parker*); in the Middle States, *Bigelow, Boott, Greene, Darlington, Schweinitz;* as far north as lat. 57°, and there extending from the Rocky Mountains to Hudson's Bay, (*Drummond*).

" The plant, after maturing its fruit, speedily withers and disappears. After the first week in June it is difficult to find a vestige of it." (*Darl.*)—The tubers of the root are said by Dr. Darlington to be pungent to the taste; and the herbage Mr. Pursh describes as so much resembling spring Cresses, that he strongly recommends the plant to general cultivation, as it will grow in any soil. Persoon's name of *tuberosa*, which is of equal date with that of *rhomboidea*, would be more suited to the plant.

TAB. CIX. *Fig.* 1, Flower. *Fig.* 2, Petal. *Fig.* 3, Raceme of young fruit, and *fig.* 4, single young fruit or siliqua:

—*nat. size.* *Fig.* 5, The same, *magnified,* as are figs. 1 and 2.

2. Cardamine *rotundifolia ;* caule decumbente ramoso, foliis obtuse repando-dentatis petiolatis inferioribus rotundatis reliquis lato-ovalibus, petiolo elongato nunc uni-bi-foliolato, radice subrepente fibrosa. (TAB. CIX.)—Cardamine rotundifolia. *Mich. Am. v.* 2. *p.* 30. ? *Pursh, Fl. Am. v.* 2. *p.* 439. *Pers. Syn. Pl. v.* 2. *p.* 195. *Spreng. Syst. Veget. v.* 2. *p.* 885. *De Cand. Syst. Veget. v.* 2. *p.* 247. *Ejusd. Prodr. v.* 1. *p.* 149. *Darl. Florul. Cestr. p.* 75. (non *Hook.*, nec. *Bigel.*)

HAB. Along the banks of streams in the mountains of Carolina, *Michaux ?* Virginia, *Pursh.* Louisiana, *C. S. Parker, Esq.* Near West Chester, Pennsylvania, which is probably its northern limits, and where it is rare. *Dr. Darlington.*

*Radix* subrepens, fibrosa. *Caulis* gracilis, glaber, spithamæus et ultra, nunc pedalis, decumbens, ramosus ; ramis elongatis tenuibus simplicibus foliosis, ex axillis petiolorum progredientibus. *Folia* sparsa, magis minusve petiolata etiam ad extremitates ramorum : *inferiora* multo majora (vix ulla omnino radicalia) longe petiolata, orbiculata seu ovali-orbiculata; petiolo sursum dilatato, non raro hinc lobulo solitario aucto seu unifoliolato; hinc folium subcompositum : *superiora* sensim minora, late ovalia, omnia obtuse sinuato-dentata breve petiolata. *Flores* in corymbum seu racemum dispositi, remoti, minores quam in *C. rhomboidea.* *Siliquæ* immaturæ, lineari-subulatæ, patentissimæ.

Dr. Darlington has observed a pair of lobes on the petioles of the larger leaves, hence showing a great disposition to become pinnated, as is the case with the greater number of species of the genus. The same author farther remarks; "the *C. rotundifolia* continues to extend its slender branches, fresh and green, nearly throughout the summer: they usually lie prostrate on the mud, and often strike root after the manner of creeping or radicating stems, a circumstance never observed in the other species. Sometimes a young shoot or proliferous stem starts from the end of the raceme of *Siliquæ* after the fruit is fully grown."

TAB. XCVII. *Fig.* 1, Flower. *Fig.* 2, young siliqua:—*magnified.*

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ESSLINGEN, 15*th February*, 1832.

## NOTICE TO THE MEMBERS OF THE UNIO ITINERIA.

As the distribution of the specimens of plants collected last year in the western and upper Pyrenées, and in the department des Landes, is now so far advanced as to allow the shares to be despatched in the space of about three weeks, and as the very considerable expense of this journey is not yet covered, we feel it incumbent, previously to giving to our fellow-members the following more full account, to offer a proposal, by the approbation of which an easier method for covering the expenses would be obtained.

Completely as the third journey to the Pyrenées has succeeded, through the praiseworthy zeal of our traveller, yet the pleasure we felt at the beautiful and rare acquisitions, has been painfully saddened by his death, which took place after the termination of his journey. Happy and in perfect health had our friend Endress, after having performed his task, returned in the middle of November, as far as Paris, where he enjoyed during a fornight the hospitality of M. Gay, who, as member of the *Unio,* takes so lively an interest in its promotion. But leaving Paris in very unfavourable weather, and arriving at Strasburg, he fell ill at that place, and died, in consequence of an inflammatory fever, on the 9th day, (Dec. 9,) notwithstanding that Professor Nestler of that place took every care that neither medical assistance nor any necessary comfort should be wanting.

This sad occurrence, in which all members of the Unio will share, has still farther increased the expenses, both by his illness and by the funeral, which could not be expected to be defrayed by the very scanty means of his parents.

The account shows that, besides the shares already subscribed for, 20 more single shares should be made up and offered for sale, in order completely to cover the expenses: but, in that case, each single share at 30s. could not contain more than 150 specimens.* In place of this, we now make a proposal to increase to subscribers for single shares, of which there are 60 on the list, the number of specimens to 200, in return for which we solicit an addition of 10s. to the sum already subscribed. We not only think this proposal to be very desirable for the members, since they obtain, by these means, a more complete Flora of the Pyrenées, but we also think it to be our duty to make this proposal to them before we look out for other subscribers. However, we request such of the members as are not agreeable to our present proposal, but remain satisfied with the number of 150 distinct species, to send us their answer by post, as we shall consider each subscriber from whom no answer has arrived by the 5th of March, as coinciding in our proposal, and shall draw upon the receiver for the additional 10s.

With regard to the *Algiers Expedition*, we are enabled to present the agreeable news, that Mr. Schimper arrived there on the 10th of last December, and that his reports are very promising for a favourable result of the undertaking. In the mean time, Mr. Schimper, in case he succeeds in entering into an advantageous agreement with a French medical officer, who is also a botanist, and who has offered his services, will again leave Algiers for the Balearic Islands, by which means the *Unio Itineraria* may expect to obtain not only one twelvemonths' Flora of Algiers, (collected for the summer season by the French botanist,) but also a Flora of the aforesaid Islands, for which purpose Mr. S. is provided with the best instructions; and if we meet with sufficient support, of which we can scarcely doubt, Mr. S. is, in that case, to continue in the Balearic Islands for a whole year, from whence he might alternately visit likewise the neighbouring Spanish coast of Valencia and Catalonia.* In the spring of 1833, for which year fresh subscriptions are to be made, we wish to send him either to Spain exclusively, and that chiefly to the mountainous parts of Grenada, or, in case the passage to Mount Atlas were accessible by that time, to send him again to Algiers. We have indeed fixed the amount of a single subscription for the Algiers journey to 60s., but, for the sake of enabling every member of the Unio, to whom that amount might be too high, to participate in it, we are willing to receive also subscriptions for half shares at 30s. That subscriptions for Insects, Mollusca, and other Zoological subjects, are also to be received, we have already noticed in our first prospectus concerning the journey to Algiers.

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* This number is certainly less than in former years, which is owing to the greater expenses of the journey. But, on the other hand, the species are more scarce and of greater interest to the science. As proof of it, a printed list, enumerating part of the collection, will here be added.

For the satisfaction of such members as have subscribed for Caucasian specimens of plants, we can state, from letters received, that several interesting transports of them are on their road hither, whose arrival are shortly expected, and of which a fuller account will be given in due time.

## Enumeration *of part of the* Plants *collected in* 1831 *by* M. Endress, *in the* Pyrenees *and the department* des Landes.

Veronica nummularia, *Gouan.* Pinguicula grandiflora, *Lam.* — lusitanica, *L.* Airopsis globosa, *Dec.* Trichodium elegans, *Thore.* Avena Thorei, *Duby,* (longifolia, *Thore*). Koeleria setacea, *Dec.* Festuca sabulicola, *Duf.* Phleum Gerardi,

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* Just as this notice was in the press, we received another letter with very favourable accounts from Mr. Schimper, but, at the same time, with a proposal, to suffer him to proceed to Tunis in the beginning of next summer, where the high mountains are now accessible, which proposal might merit a preference; but which must be decided by circumstances.

*All.* Scirpus tenuifolius, *Dec.* Galium cespitosum, *Ram* Asperula hirta, *Ram.* Potamogeton variifolius, *Thore.* Anagallis crassifolia, *Thore.* Androsace argentea, *Lap.* A. ciliata, *Dec.* A. diapensoides, *Lap.* (pyrenaica, *Dec.*) Ramondia pyrenaica, *Pers.* Viola cornuta, *L.* Beta maritima, *L.* Herniaria pyrenaica, *Gay.* (n. sp.) Bupleurum pyrenaicum, *Gouan.* Gaya pyrenaica, *Gaud.* (fructifera). Libanotis verticillata, *Dec.* Helosciadium intermedium, *Dec.* (Sison inundato-verticillatum, *Thore.*) Merendera Bulbocodium, *Ram.* Narcissus Bulbocodium, *L.* Scilla nutans, *Sm.* S. umbellata, *Ram.* Asphodelus albus, *L.* Luzula pediformis, *Dec.* Juncus pygmaeus, *Thuill.* Triglochin Barrelieri, *Lois.* Erica polytrichifolia, *Salisb.* E. scoparia, *L.* Passerina nivalis, *Ram.* Saxifraga ajugæfolia, *L.* —aretioïdes, *Lap.* —capitata, *Lap.* —Geum, *L.* —grœnlandica, *L.* —nervosa, *Lap.* —Saponaria cæspitosa, *Dec.* (elegans *Lap.*) Silene stellata, *Lap.* (ciliata, *Pourr.*) —bicolor, *Thore.* Arenaria montana, *L.* (multicaulis, *Thore.*) —purpurascens, *Dec.* —tetraquetra *β.* uniflora, *Gay.* Lychnis corsica, *Lois.* —pyrenaica, *Berg.* (nummularia, *Lap.*). Lythrum Grefferi, *Ten.* Reseda sesamoides, *L.* Potentilla alchemilloides, *Lap.* Helianthemum alyssoides, *Vent.* Aquilegia pyrenaica, *Dec.* Anemone fulgens, *Dec.* Ranunculus amplexicaulis, *L.* Hyssopus officinalis, *L.* Bartsia spicata, *Ram.* var. Linaria juncea, *Dec.* Orobanche pruinosa, *Lapp.* Alyssum arenarium, *Dec.* Cochlearia pyrenaica, *Dec.* Sennebiera pinnatifida, *Dec.* Cheiranthus sinuatus, *L.* Cardamine latifolia, *Vahl.* Geranium cinereum, *Cav.* — Endressi, *Gay.* (species nova, in memoriam beati *Endress* dicta). Genista hispanica, *L.* Adenocarpus parvifolius, *Dec.* Astragalus bayonnensis, *Lois.* Ornithopus compressus, *L.* — ebracteatus, *Brot.* — roseus, *Duf.* Medicago striata, *Bast.* Vicia Orobus, *Dec.* Orobus ensifolius, *Dec.* Hieracium compositum, *Lap.* — lampsanoides, *Gouan.* Inula tuberosa, *Lam.* Erigeron graveolens, *L.* Aster pyrenæus, *Desv.* Centaurea Endressi, *Hochst. et Steud.* (C. nigra var. radiata *Dec.* sed a C. nigra abunde diversa). Serratula Bocconi, *Gus.* Serapias cordigera, *L.* — Lingua, *L.* Carex Pyrenaica, *Wahl.* — trinervis, *Desgl.* Quercus fastigiata, *Lam.* — Tozza, *Desf.* Asplenium fontanum, *Dec.*

Each subscriber for a single share, who agrees to the additional payment of 10s., can rely upon his share of 200 specimens containing every one of the above enumerated plants.

Those subscribers who have paid for double shares, and on whom no additional demand can be made, will find the above printed notice put up with their respective shares.

(Signed) Prof. Hochstetter.
Dr. Steudel.

# A SKETCH
OF
# THE PROVINCE OF EMERINA,*

*In the Island of Madagascar, and of the Huwa, its Inhabitants;*

WRITTEN DURING A YEAR'S RESIDENCE

BY THE BOTANISTS

CHARLES THEODORE HILSENBERG of Erfurt,

AND

WENCESLAUS BOJER of Prague, in Bohemia.

(*With an APPENDIX on the TANGHINA POISON.*)

" Ill faut chercher seulement à penser et à parler juste, sans vouloir amener les autres à nôtre gôut et à nos sentimens."—*La Bruyere.*

*Tannanarivou, Emerina, May,* 1823.

## PREFACE.

Of all the provinces into which the great Island of Madagascar is divided, none attracts so much curiosity at this moment as the province of Emerina, not only by its situation, its great extent, the peculiar customs of its numerous population, the mode of its government, &c. bnt principally by the relations which the British Government keeps up there, with a view to civilize the people, and to impart to them an acquaintance with European arts and sciences.

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* Every one who has taken any interest in the Botany of the east coast of Africa, and of the islands of Mauritius and Madagascar, is aware what great

Having been deputed by his Excellency Sir R. Townshend Farquhar, Bart. Governor and Commander-in-Chief of the island of Mauritius and its dependencies, to accompany James Hastie, Esq. the general agent in Madagascar, to Emerina, there to explore, in our capacity of naturalists, this vast, and hitherto almost unknown country, and to contribute, by our discoveries, to the progress of the sciences, and of botany in particular, we here offer some sketches of our observations, made from the period of our arrival in Madagascar, in May, 1822, to the time of our departure.

I shall not dwell long on the provinces of Béhdzimicharac and Béhtanihména, which have been made known by the repeated visits of merchants, both because I did little more than pass through them, and because the fever which attacked me at the beginning of my tour in the interior, made me unable to remark anything of importance. I shall, therefore, confine myself to what I observed in the province of Emerina, though there, also, I shall be obliged to repeat many things written some time ago by the able pen of Mr. Hastie.

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services have been rendered to science by the researches of the intelligent and indefatigable Naturalists, Messrs. Hilsenberg and Bojer. The journal of their residence at Emerina, the most extensive and most important province of Madagascar, has been kindly communicated to me by my invaluable friend Mr. Telfair, with permission to publish such portions of it as I might think suited to the pages of the *Botanical Miscellany.* If I have, in making this selection, not confined myself to those portions of the Journal which were strictly *botanical,* I shall have, I trust, the approbation of my readers, on account of the highly curious details of the manners and customs that are given of a people little visited by Européans, and only partially described by a few recent travellers. Mr. Hilsenberg has since died, during the voyage of Captain Owen, who surveyed the East Coast of Africa, in H. M. S. Leven, while M. Bojer, now Professor of Botany at the Royal College in the Mauritius, prosecutes there his favourite studies with unabated zeal.—Ed.

In general, my remarks on the customs of the people may be considered as bearing prospectively on the future; for ever since the treaty between His Excellency Sir R. T. Farquhar and King Radama, followed by the abolition of the slave trade, and the frequent visits of Mr. Hastie, a great change has taken place in the court and country. The European manner of dressing, eating, &c. has been partially introduced; three missionaries have been sent, by the London Missionary Society, to instruct the young natives in religion, and reading and writing; artizans have come over to show them our trades and our modes of labour: in short, Government has expended, and still is laying out, large sums of money, in order to civilize this country, especially the province of Emerina, and of which the natives always showed themselves most willing and able to receive and appreciate our customs.

The end will surely crown all the efforts of our British Government, and contribute to the glory of a nation, one of the principal objects of which has ever been the civilization of people who are plunged in profound ignorance; and thereby to lead them, by the gentlest means, to the knowledge of Christianity, of its peaceful and beneficent precepts, without which no society can enjoy real felicity.

We beg the indulgence of the reader if we have not been so diffuse as the importance of the subject might demand; but it is very difficult to acquire an entire insight into the customs of a people whose language is imperfectly known to us, without even looking to the length of time which such a description would require, and which, with us, was very much circumscribed.

CHARLES THEODORE HILSENBERG.
WENCESLAUS BOJER.

TANNANARIVOU, EMERINA,
*May* 15, 1823.

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THE Province of Emerina, which may be regarded as the centre of Madagascar, but whose geographical situation is not correctly known, is divided into several sub-provinces or dependencies. It is the most elevated district of the whole of this vast island, and, for the same reason, also the healthiest, being the only part where the life of an European is not in hazard. All the face of the country is covered with mountains, which are generally sterile, and on which are great masses of rock: from this circumstance, there is none of the dangerous fever that prevails near the coast, and periodical maladies are unknown. Fertility of soil cannot, however, be enumerated among the advantages of this district; it is more barren than the maritime provinces, particularly those lying towards the west. The soil that is reddish, and full of stones, produces but little; the want of good culture, and the disadvantages of climate, contributing to increase its natural sterility. Five months only of the year can be employed in agriculture, as a distressing drought prevails in the remainder, especially from the end of April to September. At this season, also, it is very cold in the mornings, owing to a dry wind which blows from the east, and only ceases at the end of September, when the thermometer often drops to 7°X°. All vegetation is parched and dried up, not a drop of rain falls, though this is partly compensated by a heavy fog, which nightly envelops the mountains, and is precipated to the earth on the rising of the sun. But from October to the end of March, the heat increases and becomes sometimes excessive; rain falls daily, beginning in the afternoon and lasting all night, often so violently as to tear up the soil and carry away the trees, hills, and even the rocks. This is also the season of storms, and often accompanied with dreadful hurricanes, of which it is difficult to imagine the violence, and impossible to withstand the fury. Destruction and tumult mark their progress; earthquakes occasionally take place, though not of a violent description; and hailstones, of enormous size, fall, which are much dreaded by the inhabitants on account of their rice, that is generally above ground at that period.

Agriculture is very carelessly performed at Emerina, as in the other parts of Madagascar. The natives are too indolent, and they leave almost every thing to nature. Contented with stirring up the ground with a spade, and scattering a few seeds, they are sure of reaping a harvest which will supply all their wants during the year; and though the inhabitants of Emerina are compelled, by the nature of the soil, to take rather more pains, yet there we may see, with regret, large tracts of land lying fallow, which might produce enormous crops, and where now the careless inhabitants only plant a few plots of rice. Here, as elsewhere, it seems reserved to European industry to transform these deserts into habitable tracts; for, with proper care, they would produce six times the food requisite for the present number of inhabitants.

*Rice*, the great object of Madagascar culture, and the principal article of their food, is well known to prefer the marshy spots; consequently, the low lying grounds, where the water does not run off, or the sides of the river, where inundation is easy, are preferred for this purpose. After having divided the plot into little squares with the spade, called Fangadi, the rice is thrown in, which soon germinates, and, after transplantation, yields a hundred fold. The manner of planting Rice is different among the Béhtanihména. These people do not sow their seed, in order to transplant it afterwards, but put in the rice as we should do kidney-beans. They select the gloomiest spots, even the centre of a wood, and, having cleared a space of ground, they dibble holes with a sharp pointed stick, and drop in the grain. This is done twice a year; and from this district the finest and whitest rice in Madagascar is obtained. The ground is frequently changed, and another spot cleared: but after two or three years the natives return to the original place, and cultivate it anew; and wherever they sow their seed, there they are sure of an abundant return, independent of the state of the weather. Sometimes they select a half dried marsh, and sending in their oxen they drive them backwards and forwards till the ground is become like wet mud, when they put in their seed. Every fortnight, or at longest, monthly, the soil is carefully cleared of weeds, until the rice begins to flower, after which it remains undisturbed. The Béhtanihména have also a different mode of cutting rice from the inhabitants of Emerina; that is, they only take off the ear, and leave the stalk; and instead of beating out the grain, they rub it with the hand over an outspread mat. The standing straw is used for manure, instead of being burned, as at Emerina; the oxen are littered with it, and it is laid over the soil. Women and children only are employed in the culture of rice, the men assisting to clear the ground. Thus it may be observed that the inhabitants of Madagascar could hardly maintain themselves without the existence of those extensive marshes, which constantly exhale pestilential miasmata, and to which the insalubrity of the climate may justly be attributed.

To return to Emerina. After *Rice*, *Manioc* and *Batatas* are the chief articles of food to its population. The roots of *Manioc* often acquire a monstrous size, and we have measured some which were 15 feet long, and almost a foot in diameter. Then come *Maize, seasoned herbs, "Giromonds," Calabashes, Earth-nuts, (Arachis,) Sugar-canes, Pine-apples, Breadfruit,* and the *Vine*: and among the articles of manufacture are *Cotton* and *Hemp*, &c.; *Potatoes*, that Mr. Hastie introduced, have thriven admirably, and are of excellent quality. The same may be said of other vegetables, such as beans and peas. The climate of Emerina seems peculiarly suitable to European plants, and we cannot but hope that a great quantity may soon be naturalized. It is much to be regretted that the degrading love of gain, which characterizes these people, and of which we shall have to cite but too many instances, rarely allows them to wait till the productions of the soil have attained a proper maturity: they gather their vegetables and fruit, and carry them to the bazaar, before they are half ripe, in order to secure some paltry pieces of coin.

An exact enumeration of all the *indigenous Madagascar plants*, is, and will long remain, a desideratum in botany. Centuries must previously elapse, and the knowledge can only be obtained through the exertions of the sons of the north, who will render the climate of Madagascar less prejudicial by extending the limits of its cultivation, and exploring the hitherto undiscovered districts. The productions of the west, north, and southern coasts, and of all the interior, remain entirely unknown, and the slender documents that have been furnished, as to the vegetation of the N. East, by the French naturalists, most of whom have perished from the effects of the climate, serve rather to stimulate, than to satisfy, a botanist's curiosity. We were so fortunate as to be the first botanists who penetrated the interior of the island with a view to study its vegetable treasures, which, though possessing some points in common with other maritime countries, yet present many singular features, and of which, we propose, at a future period, to publish scientific descriptions: still, we must frankly confess, that we but traced a slender path towards the approaches of those immense and inexhaustible natural riches, of which the most creative fancy can hardly pencil a sketch.

At Emerina, however, one must not seek those magnificent forests which adorn the eastern shores of Madagascar, though small plantations, and a few trees, are not of unfrequent occurrence, especially in the neighbourhood of villages. The nearest forests are two or three days' journey from the capital; in consequence of which, wood is dear, and the inhabitants are obliged to make use of grass, straw, and dried dung, to cook their food, and for common fuel.

Emerina is very productive in cattle, which are remarkably large and fat; there are, also, many sheep, differing little from goats, being covered with hair instead of wool. Their heads, however, are broader, and their tails so big as frequently to weigh 9–10 lbs. Hogs and Cabris also abound; but, by an absurd command of the ancient kings, they are not allowed to come near the capital, and are kept at five or six leagues distance. This regulation has, however, been recently abolished, at the request of Mr. Hastie. Poultry, as well as turkeys, which Mr. Hastie has introduced, are excessively numerous; and, among the game, are wild ducks, that often cover the whole surface of the ponds. The rivers produce but little fish, and are full of Caymans; but Eels and Crabs abound, the latter often of enormous size. The only mode of fishing is by baskets and lines; the use of nets is unknown.

Notwithstanding the productions that we have enumerated, the inhabitants of Madagascar are but ill fed for half the year,—they prefer fried grasshoppers and silkworms, esteeming the latter a great delicacy; but their principal dainty is the flesh of an unborn, and but half-formed, calf; to obtain which, they frequently destroy the cows;—an inhuman practice, which, since our visit to Emerina, has been forbidden by Government. A great number of very large and useless dogs are kept by the people: these animals often make a most hideous noise during the night, for if one of them chances to bark, the others immediately chime in with a dreadful chorus of yells and howls.

The inhabitants eat twice or thrice a day: their common meal is boiled rice, with the addition of some roots and leaves, seasoned with pimenta and black salt. The latter is extracted from the ashes of the Reed mace (*Typha communis*), called *Vundra*, and which they have a habit of licking frequently. Their mode of feeding is disgusting to an European; they rarely employ knives or forks to divide the beef or fowl, which are their customary meat, but pluck it to pieces with their fingers, and put it into the mouth with the hand. Pure water is their sole beverage; but those who can procure intoxicating liquors are but too fond of them. After every meal, they carefully clean their teeth; a laudable practice, to the neglect of which may be attributed the toothaches which are so distressingly prevalent in Europe.

The inhabitants of the province of Emerina call themselves Huwa, or Ambaniandru, and, ironically, Ambua-lambu (dog and hog); a name originally conferred on them by their enemies, the Saccalawa, and under which they are known in the colonies. In person, they are about the middling stature of Europeans: their colour varies considerably, some being very black, others only swarthy; but the complexion of the greater number is olive-brown. All those who are black have woolly hair, like the negroes of the African coast, while those who resemble mulattoes, or Indians, in tint, have long hair like Europeans: their features are very regular, with fine eyes, and well-set teeth, which they have a custom of blackening at intervals with the root of a climbing plant, the *Lingun,* with the intention of rendering them whiter. In disposition they are lively and obliging; but vain, capricious, revengeful, and avaricious. They are very ready in the use and application of their bodily powers: and in the great assemblies, or Khabars, often exhibit much genius and natural eloquence.

The native costume is simple. The men, who are robust and well proportioned, wrap themselves in a cloth, which they throw like a cloak over their shoulders; and another, that is wound round the waist. These garments, being very rarely changed or washed, harbour a great quantity of vermin, of which the wearers are so little ashamed, that they make no scruple of standing in the sun, in the open streets, and employing their slaves to rid them of the annoyance. Their hair is platted in little locks, which are becoming in appearance; but as it is the custom to anoint the head with ox-grease, and to wear no covering, the heat of the sun renders the scent intolerable. The beard is suffered to grow on the chin only, being eradicated on other parts of the face with pincers. The king's guard have now their hair cropped: this regulation caused, two years ago, a revolution among the women, who were much distressed at seeing their husbands deprived of their ornamental locks; but the execution of seven of these females, with several men, who were the instigators of the disturbance, restored tranquillity. Both men and women adorn the upper part of the arms and the belly with scars, differing according to taste, and resembling bas-relief. Many individuals also pierce their ears and dilate the perforations so as to admit the three fore-fingers. Their principal finery consists in decorating their feet, hands, and neck, with chains of silver, coral, and pieces of money, from a *franc* to a piastre in value, amounting sometimes to 200–300 francs. They keep these jewels as their most precious possessions, often not parting with them even after their death. Children of both sexes go naked to six or seven years of age, and the slaves are generally in a state of perfect nudity, and disgustingly filthy.

The costume of the women is similar to that of the men: but they adjust the cloth in a different fashion, and frequently wear an Akandzu, which covers the bosom. The hair is divided into a great number of small tresses, varying according to fancy, and a great deal of time is spent in keeping it in order.

Though the Huwa women cannot generally claim the praise of having fine figures, yet a great many are endowed with expressive countenances and brilliant eyes. Of this, they seem sufficiently aware; they are almost, without exception, addicted to intrigue, and their love of money and of dress, aided, unhappily, by the intercourse of Europeans, divests them of all sentiments of honour and of decency. Gay and affable in disposition, with ingeniously braided hair, and white teeth, these women, wrapped in their Tuturanuh, are as skilful as any Parisian or Florentine females in setting off their charms and captivating the attention of spectators; and the ancient law of Emerina, which sentenced a woman, convicted of adultery, to lose her head, and made the husband the executioner, now remains a dead letter.

The people of Emerina, though without any form of divine worship, yet acknowledge a Supreme Being, as the patron of justice and virtue, who will punish or reward men after death, according to their deeds. The initiatory Hebraic rite of circumcision (Mamurah) is every where performed on boys, seven or eight days after their birth, and is solemnised with much festivity in the family. One of their great periods of rejoicing is at the commencement of the year, and is called the Feast of Bathing. The year in this country, is measured by the lunar evolutions; thus it sometimes consists of 12, sometimes of 13 portions, and the termination and commencement of the year do not occur on the same day, nor always in the same month. It is generally in June or July, and on the first day of the new moon, that the year begins, and it is marked by the ceremony which I have elsewhere described.

Madagascar exhibits an extraordinary number of absurd superstitions and prejudices, of which it would be difficult to trace the origin, though most of them seem to have a connection with the vestiges of barbaric religion, transmitted to its inhabitants by their African and Asiatic neighbours. In sorcery, ghost-seers, and diabolic agency, they put implicit faith, and even laugh at those who seem to be incredulous. Cats and owls (*Vuran-Dulu*) are creatures of which they never permit the existence among them; because they aver that they partake in sorcercy, and that it could not be easily practised without their agency.*

The Skide, or oracle, of the Madagasses, which is daily interrogated by them, consists in a very fine sand, which they put in a fan used for cleansing the rice, and make prayers over it:—afterwards they boil it several times, and having traced an indistinct sort of writing upon it, they pretend to discover the past, present, and future by these ceremonies. If sick or uneasy, or if they desire to be informed of the health of their friends who are absent at war, they instantly consult this divinity, and give implicit credence to the answers thus obtained. They never eat any thing which the Skide has prohibited: the Royal Family, especially, and the nobility, will not so much as touch the presents commonly brought by their subjects till they are assured by the oracle that no harm or danger will result from the use of them.

The Tanghen (or *Tanghina*), which is the seed of a tree (*Tanghinia*, Petit Thouars), unfortunately too abundant throughout this vast island, and which is one of the swiftest and most deadly of vegetable poisons, is very often employed for the detection of theft, or as a test in any case where proof of a crime is wanting. This kernel is bruised on a stone, and infused in water, which the accused person is compelled to drink. If he maintains his innocence, and if he has no witnesses, then three bits of chicken skin are added to the dose, and he is compelled to swallow rice water till the poison is rejected by the stomach;

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* Since the date of this Journal, cats have been permitted to enter the dwellings.

when, if the three pieces of skin are not also vomited, he is considered guilty of the crime in question. Generally speaking, the Tanghen is but little employed except in the province of Emerina, and there its application to persons is becoming daily more unfrequent, being confined to the test of great crimes, as conspiracy against the king, or accusation of sorcery (*Bamusawu*) or of being a poisoner, where other proof of these crimes is wanting. The Huwa, on the slightest indisposition, or suspicion of having taken poison, assemble their slaves, and administer the Tanghen to them indiscriminately, in order to detect the malefactor. Still, as these executions cannot take place without the authority of the king, who is daily becoming more and more enlightened, the Tanghen is less used on human beings, and it is common to substitute two dogs for the accuser and the accused, and to make them drink the poison; when, if the animal of the former dies, he is adjudged to pay a fine as a false witness, and *vice versa* if the dog of the accused person falls a victim.*

But the most horrid instance of their savage superstition takes place on those days which are considered as the king's lucky days (Winitanih ni Endrien). If a woman bears a child on one of these days, she is obliged to drown it immediately. As may easily be supposed, a great annual loss of infant life is the consequence of this inhuman regulation, though these days are not numerous, and the law only extends to the black population. It would, however, appear, that the principles of humanity professed by the present king are likely soon to abolish this custom, so detestable in itself and so inimical to the increase of the nation.

Amulets of a kind of wood, hung round the neck, and enclosed in a little bag, are supposed to preserve the wearer from wounds and disasters of war, and this kind of charm (Tanafudi) is continually used. There is another kind, called Ramahawalu, that is held in extraordinary esteem, because of the miracles, say the Madagasses, that it performs. This divinity consists in a little bag that contains some roots, wrapped up in bits of red cloth, and a chain of silver and shells huddled together and fastened to the end of a black stick. The wearer is often subject to run and to fall, owing, as they suppose, to the influence of this charm. Frequently he runs in all directions, not knowing where he shall stop; and, at such periods, the inhabitants aver that something has offended the divinity, or that a sorcerer has crossed his path. In short, they have such implicit credence in this kind of magic, that when its influence is evident in a public assembly, all the Huwa tremble, particularly those who are on ill terms with their consciences, and who believe themselves already detected. They always carry this charm with them to war, and elsewhere, and have so great a reverence for it that they even present it in offerings to their king. They believe that the fulfilment of a bad dream may be prevented by throwing a little ashes behind the house, and they never sleep with their heads towards the south, which they think would occasion the king to have uneasy dreams. When they sneeze, they have the same custom of saluting one another as all the ancient nations, Romans and Jews, as well as many modern people. A prayer is then said, of which the following is a nearly literal translation:—"Now is evil gone and good come; it cannot stop my way before me, nor overtake me behind nor approach me between two lands: on the earth it cannot crush me, nor descend upon me from on high; it shall glide away like mud, and be rejected like dirt, because it has done evil: a great rock, from which it cannot rise, shall fall upon it, for evil is departed, and good is come. It shall war with me no longer, and I shall overcome; I shall be like a *dziriri* (a symbol of the swan) on the water; the fire shall not burn me, and I shall come unhurt from the furnace. Fifty plants of *Banana*, and a hundred spikes of sugar-cane, though dead when I transplant them, shall bud anew, and though dried up, shall bloom again."

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* See the Appendix to this Journal for a full account of the ordeal of the *Tanghen*, and a figure of the plant (Tab. CX.) that yields the poison.—Ed.

When the mild and beneficent doctrines of Holy Writ shall have been disseminated among this people, we have every reason to hope that their improvement and happiness will materially increase, and that every vestige of superstition will be swept away.

Polygamy, in the common acceptation of the word, does not generally exist in Emerina, though it is practised in a manner still more repugnant to European ideas; as, for instance, a man may marry several sisters, or take a widow and her daughters at the same time; and it is impossible to persuade them of the impropriety of such conduct. It is customary for the parties to live sometime together before a formal marriage takes place, and then the following ceremonies are observed. When the families and friends are assembled, the father, or the oldest man present, takes the word, and to him the engaged couple declare their intention, and make their vows. A great feast then takes place, in which mutton is the principal viand, and the tail of the animal is always reserved for the mother of the girl. When a man desires to marry a second time, that is, to take another wife, he must make a present to his first wife, otherwise she would be at liberty to quit him, though not to divorce herself, which can never be done without the husband's consent. The man also pays a piastre to the king. The men may quit their wives without opposition or objection, and this is commonly done at the Bathing Festival. The affection that parents feel in Madagascar for their children is remarkably strong; they rarely punish them, and both husband and wife frequently carry their little ones on their backs, wrapped in a cloth, and, thus encumbered, perform their daily labour. The infants are never confined by any bandage, and are soon allowed to creep on the ground with the full use of their limbs: thus they early learn to walk and help themselves, and a cripple is hardly ever seen. They marry, too, very young. As to the funerals of the Huwa, they are thus performed:—As soon as a person expires, the corpse is laid on a bed, and washed, the hair is unbraided, and the body is rolled in three or four different cloths, while the hands and feet are adorned with jewellery, and the neck enriched with strings of coral, and other Arabian stones. Here it remains, till all the family, with dishevelled locks, and wrapped in old *pagnes*, have assembled around, to weep and to convey it to the place of interment; during which interval, guns are fired off before the door, as frequently as the defunct had given orders should take place, and which is according to his means. All the slaves of the house, carrying the most valuable effects, with the family, surround the coffin, uttering the most lamentable cries. When arrived at the tomb, which is of masonry, and often rises to ten or twelve feet high, the corpse is deposited there, and with it are buried all the best clothes, along with the money of the deceased, often amounting to a very large sum. Notwithstanding the poverty of the surviving relatives, they never take back this money, which gave rise to the remark, that "the mines of Madagascar would be richer than those of Peru, as the silver lies there all ready purified and coined." After the tomb is closed, and the stones arranged above it, a great sacrifice takes place. The wealthy often slay twenty, thirty, fifty, and even an hundred oxen, which are divided among the family, friends, and guests. The horns of the beasts, with a kind of white drapery stretched along them, are arranged upon the tomb, to prove to the passers by the riches of the deceased. At the year's end, the same ceremony is renewed, the tomb is opened, and the corpse turned on its belly, and those families which can afford it spread new and consecrated mats (dzihi massinna) over the tombs, at the time of the Bathing Festival, alleging that the spirit of their friend would be offended at finding that his dwelling was not cleaned. There being no cemetery in this country, the tombs are frequently seen in the court-yards or at some spot in the land which the deceased had himself selected, and it is difficult to walk ten steps without meeting with one. The Royal Family is interred in the enclosure of the King's court, and on their tombs are erected little houses, or sacred houses (thranu massinna). One of these is always in a state of dilapidation, though frequently rebuilt; and the people allege that the defunct is averse to having anything built above his grave, and that he always destroys it during the night. When a Huwa dies at a distance from his own country, or in war, his friends carefully carry home the bones and render all the last honours to them. General Brady has informed us, that in the country of the Saccatawa he has frequently seen the children scraping the flesh from their parents' bones with the same knife as they used to cut their food, and drying the bones and skulls at the same fire as is then employed for the purposes of cookery. The family is half comforted when the last remains of a dear friend can be recovered; if, on the contrary, the fate of war or famine compels them to inter their dead in a foreign and distant land, they yield themselves up to despair, and regard this privation as the heaviest of their woes. In the latter case, they carefully mark the spot of interment, and provide themselves with relics of it, at the interval of many years.

The diseases of the Huwa are few in number, and it is rare to see an infirm person: the mountainous situation of Emerina exempts it from the fevers so prevalent on the coast, and the natives often attain to extreme old age. Leprosy and small-pox are common, and scorbutic eruptions that cover the whole body. Formerly small-pox was very prevalent and committed great ravages, especially in 1817, when it carried off a large proportion of the native population; but since the introduction of vaccination it has almost disappeared. As to the leprosy, one sees, from time to time, individuals miserably affected by it, but they are few in number, and being separated from the rest of the people, it does not spread. Medicines, in this country, consist entirely of simples, either roots or herbs; plasters and unguents are unknown, and it is surprising how rapidly their wounds close. Of surgery, they are still more ignorant; amputation, in a case of fracture or gangrene, is never heard of, and, consequently, death is speedily the result of these accidents.

Their amusements consist chiefly in dancing and singing, accompanied by two or three instruments; their music is most methodical and very poor, at least it appears so to an Europæan ear, while they are passionately fond of our music, and a simple flute will move them even to tears, which they call *malahela* (sorrow). The instruments used by them are, 1st, the *Wallia.* This is a large dry bamboo cane, on the surface of which are stretched light cords, that are drawn up by pieces of calabash, called *Kapilla.* This instrument imitates well the sound of the guitar, and is capable of some improvement. 2d, the *Lukañga,* which is a half calabash that produces an uniform sound by means of a single string that is attached to it.

The Huwa have a kind of game that they call *Kathra,* and which bears some resemblance to Backgammon, being a board with thirty-two holes, and played with the seeds of the *Guilandina Bonduc.* Bull-fights are not uncommon among them, and throwing stones at a mark, for the prize of a hen, is a daily amusement. The custom of chewing tobacco is one of the greatest luxuries of both sexes; but rarely are they seen to smoke, because one of their former kings forbade it; they also often used hemp for the same purpose.

Among the inhabitants of Emerina may be enumerated 4 different castes. 1, The Royal Family; 2, the Nobles; 3, the Huwa; 4, the Blacks. Each of these remains distinct, and they cannot mingle; a woman of the white Huwa population, who should intermarry with a black, would be immediately reduced to slavery, and so on. Thus, too, the people are divided from the nobility, among which no merit or services can enable them to rank; they may obtain rewards and employments, but can never class with the nobles, who trace their origin from the ancient kings, and therefore bear the title of *Andrien-dahi,* regal men. The King's Blacks, called *Dzieron-dahi,* are the chief prop of the crown.

Among all the natives of the vast island of Madagascar, the Huwa are the only race which can approximate to Europeans, as to arts and manufactures; but it is to be regretted that they will only work to supply their own immediate wants. They weave very fine stuffs of silk and cotton, of which the designs and colours, which latter are extracted from the bark of trees, surprise a foreigner, and all this labour is accomplished by the women. After clearing the cotton from the seeds, they weave it by hand with a spindle, and fasten the thread to two pieces of wood, which they stick into the ground at a short distance from one another, for they never weave a piece any longer than is needful for a garment. Having spread the threads as long as they can reach, they weave them by a most simple process, placed almost level with the ground, and assisted by a small shuttle. The common cotton cloth is called *Tuturanah*, or *Kilusse*, and the most valued silk stuff, *Kachena*.

Silk and cotton are not so abundant as they should be, owing to the deficient culture, especially the former. The Madagascar silkworms are totally different from ours, and are found on the foliage of the *Amberiwatri* (*Cytisus Cajan*), and of the *Thapia*. Mr. Hastie has introduced some from Mauritius with their proper food, the mulberry tree, and it is much to be hoped that the whole manner of preparing their stuffs will be hereby changed. Of hemp, which can only be grown in the rainy season, they make very coarse cloth and *pagnes* for the use of their slaves. The same simplicity which prevails in the manufacture of their stuffs is also remarkable in that of their utensils. The province of Emerina is very rich in iron, and there are spots where it is even found rising above ground, in lumps of 4 or 5 lbs. weight; it is as soft and malleable as paste, and the natives find little difficulty in smelting it. They fabricate scales, hammers, anvils, knives of all sorts, spades, hatchets, pincers, spoons, and, more recently, also nails, and bayonets, &c. The smith lies along on the ground, with a hammer in one hand, and a piece of iron in the other, and, instead of an anvil, it is common enough to see the people in the country beating the iron on a flat stone, placed between their feet. Instead of bellows, after the European fashion, they use two pieces of a hollow tree, about three feet high, and communicating beneath by a tube. In the hollow itself are two pistons, which a man moves up and down to kindle the fire, much in the manner that they churn butter in Europe.

The potters make earthen dishes and pots with considerable neatness; and their earthen plates, which are well varnished with lead, that they dig up in some places, have always the shape of a large vessel placed on a pedestal.

The carpenters are handy at their trade, and can plane a piece of wood perfectly well.

They also make many articles of horn, as spoons, &c. But their skill in working gold and silver is greater, and of these metals they make bracelets and chains without any soldering, the texture of which is often so delicate that Europeans themselves find difficulty in imitating them, and this highly flatters their conceit of themselves. This misplaced vanity will not allow them to think any foreign production superior to their own; they are perfect workmen in their own estimation, and if they can succeed in imitating the articles of other nations, they wonder how any person can dispute the superiority of their talents.

The internal commerce of Emerina consists in rice, cotton, silk, cattle, cloth of their own manufacture, and the traffic of slaves. For the sale of these different articles there are large fairs every day in various parts of the province, which are named after the days of the week on which they are held, as, Sunday, Alahadi; Tuesday, Taladi, &c. These fairs, which commonly take place on large plains, serve also for military exercises; and it is there, also, that the King's decrees are generally promulgated. That nearest to the capital, and situated to the south of it, is on Friday, and called Juma.

Purchases are made at Emerina either by blue or white cloth, or by piastres. The Huwa are accustomed to cut the piastre into small pieces, down to the weight of a grain of rice, and they weigh the silver in scales of very neat workmanship. By an express command of the King, it is requisite that on the smallest portion of the piastre the mark of that coin should appear, without which it is rejected, and cannot pass as money; this does not, however, prevent there being a large quantity of little bits, on which the marks of the piastre are so well imitated, as completely to deceive the unwary purchaser. A different name is given to each subdivision of the piastre.

Formerly the principal trade of the Huwa was the sale of slaves to the French at Tamatave and Foulpointe. These people furnished the colonies of Mauritius and Bourbon with

3–4,000 slaves annually; and in the registers of the King for 1819, were reckoned 1,158 that were sold belonging to him alone.

The Huwa have such an insatiable thirst for money that they even brave death to procure it, and surpass all that is said of the children of Israel in Egypt. If they can procure any pecuniary advantage they are in transports of joy, and are unable for a length of time to take their eager glances from this object of their idolatry; but the least loss overwhelms them with heavier sorrow than the death of a near relation, so that instances are not unfrequent of people deceived by their debtors, who have expired with grief. They borrow money upon their unripe vegetable productions, and can hardly wait for the period of their maturity, till they carry them to market, to satisfy their creditors, and to delight their own avarice by the sight of the money. They are so distrustful that they never think their money is safe till it is buried; and from the King down to the lowest beggar, the earth is their strong-box.

A great degree of fidelity has been attributed to the Huwa in mercantile transactions, and it has been known that articles of value lost among them, have, after many days, been found in the King's keeping; but this manner of obtaining possession of lost property seems to have been purely political on the part of government, and practised in order to raise the King's reputation with foreign nations, as well as to show how absolute was his power over his subjects.

Cultivation is too restricted, the inhabitants are too destitute of enterprise, and the roads are too bad, dangerous, and widely separated to allow of any traffic with the coast being pursued to advantage.

Tannanarivon, the capital of the province of Emerina, and the residence of the present King, is the seat also of the tribunals of justice, police, &c.: it is situated near the centre of the district, and is about 300 English miles distant, West, from the N. Eastern coast of Tamatave. This city is on the bank of the river Kiupa, which takes its rise in the S. East, and, intersecting the whole province of Emerina, falls into the sea at the N. East, near Bombetok. It is irregularly built, on the side of a large chain of mountains, and presents, from a distance, the appearance of a labyrinth, surrounded by fosses, most of the houses being perched on eminences, descents, or the edges of chasms. It consists of about three thousand houses, chiefly made of rushes, and thatched with straw; but those of the nobility are of good carpenter-work, well-built, and spacious. The roof, that is higher than the whole house, and covered with rushes, very neatly woven, and impenetrable to rain, is supported within by three large trees, resembling the masts of a frigate, one at each end and one in the middle. On each side of the copeing of the roof are two poles, which cross and form forks, often sixty feet long, and to the points of these forks are attached little birds made of wood, and even of silver, which are understood to signify the happiness and prosperity which prevail in the dwelling. The houses are divided with partitions of matting, and the furniture generally consists only of large earthen pots for holding water, with lids of matting, and small dishes, some large plates for holding the food, a pestle for bruising rice, a broom, and some tobacco-boxes in the bed and on the hearth, there being no chimney in the house. The bed is raised to twelve feet high; in the larger dwellings, even eighteen and twenty feet; they go up to it by a kind of ladder. Beside the bed is another elevation, where a three months' stock of rice is laid up. The hearth is in the centre of the room: one is for the master, and two smaller hearths for the children and slaves. The interior of the houses, which have but a single door, constructed of one piece of wood, and of enormous height, so that you enter by climbing on a lump of rock laid before it, and a single window, almost as high from the ground, and both looking west, is generally excessively dirty; its whole decoration consists in rush mats, which serve for seats, for beds and coverlids, and round the walls are ranged the family stock of plates, bottles, &c. Frequently the poultry and sheep share the habitation, which is commonly infested with an incredible number of rats. Near each house is a kind of large cellar, dug in the ground, and used for the storage of rice, &c.: it is closed with stones and earth. All the villages of this province are situated, like Tannanarivou, on mountains or lofty eminences, and surrounded by one or two rows of trenches, often fifty or sixty feet deep. This manner of fortifying themselves is probably owing to their frequent wars, and to the barbarous custom of falling on the inhabitants of a village and carrying them away into slavery. The only approach to a village is by a very small narrow path, which is barricadoed by large stones. The houses are commonly built of red clay.

The regal palace, which is situated in the centre of the capital, on the finest platform of the mountain, and all the apartments of which consist in a kind of eating-room and a sleeping chamber, is constructed, like most of the houses at Tannanarivou, of wood, and on a similar plan, except that the roof is covered with shingles, and that it stands on a platform of hewn stones. The interior is tolerably decorated, being hung with paper, and there are globes, glasses, pictures, and other articles, brought by Europeans; but the whole was far from producing the effect on me that it did on some of the missionaries, who praise the general elegance of the dwelling, and the spaciousness and beauty of the apartments.* The exterior is painted of all imaginable colours, yellow, green, blue, red, black, &c. and has the gaudy unsubstantial appearance of a house of cards. The north and south sides are adorned with different designs in silver, from the terrace to the cope-stone, and the façade is covered with ornaments of the same metal. In the centre of this is a large glass, and a small mirror above it, surrounded with silver decorations, and with large gilded frames, manufactured at Emerina itself. From this circumstance, the name of this building, the Silver Palace (Thranu-Wula), is derived. This palace is surrounded by a kind of wooden balcony, very rudely carved, to which an ascent is obtained by a ladder, for want of a better staircase. The palace and all the court are surrounded by a wooden wall, about fourteen feet high, and the top of which is thick set with spears or assaguays. There are four gates, the principal facing the north, and distinguished from the rest by twelve or thirteen steps of hewn-stone, which lead to the platform, that is a fine equal plane; the gate is also adorned above with a glass framed in silver, like the palace. Two other gates are on the east side, and one at the south. The latter leads to another enclosure, not so handsome as the first, composed of large palisades, which are sharp-pointed at top, instead of lances. This enclosure was formerly destined for the dwelling of the king's lawful wives, of which he has twelve, and his concubines; also of his nephew, the son of Prince Rateffi, who is the apparent heir of the crown, and these individuals dwell in small separate houses situated in the enclosure. The Agent-general of His Britannic Majesty also resides there, with his lady, and occupies one of the largest houses.

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* See Copland's History of Madagascar, p. 81.

The King Radama Manjaka, sovereign of the Huwa, and who considers himself now as King of Madagascar, though a large portion of this vast island is still not subjected to his dominion, is a young man about thirty years of age. In stature he rather exceeds five feet, and his countenance is very agreeable. He possesses considerable natural understanding and extraordinary shrewdness; he is as gay and amiable as he is hasty tempered, but susceptible of much sensibility and affection. He is very desirous of instruction, and is fond of the society and manners of Europeans, whom he does all that is possible to attract to his court, and takes pleasure in their conversation, especially on the subject of war. His chief delight is in hearing anecdotes of heroes who have distinguished themselves, and whom he neglects nothing that lies in his power to imitate. Since the period that Europeans have frequented the country, King Radama has much changed his manners, he wears their costume, adopts their manner of living, and has learned the French language, which he writes with tolerable accuracy. He is a great amateur of music, and as we can both of us play on the German flute, we have often the pleasure of his society, and of moving him and all his family, even to tears.

But all these pleasing qualities are eclipsed by his great self-love, pride, and distrust, which unfortunately have even increased since the British Government has kept up an intercourse with him. He has little gratitude for friendship shown him, because he looks upon it as his rightful due; he is sometimes generous, and even capable of giving largely and granting unexpected favours, but at other times his avarice is most sordid and degrading; he is incapable of appreciating and rewarding merit, and pretends to be surprised at nothing; —a quality that he has in common with all his subjects. In spite of all this, Europeans may always reckon on receiving support from him, both in the way of commerce and protection: he gives them much encouragement, and never sends them dissatisfied away.

He is beloved, or, rather, held in respect and awe by his people, who seek to please him even in their smallest actions; they will sacrifice every thing to obtain his favour, and a person who is graciously looked upon by the sovereign is sure to be equally so by his own countrymen. The greatest crimes do not exclude such a man from the society of others, who all court his friendship and seek his company: while, on the other hand, the unhappy being who has fallen under the royal displeasure, is forsaken by those who seemed most devoted to him, and only those who are similarly situated will venture to approach him; even his own family no longer regarding him as heretofore. Thus the flatterers of the monarch will even destroy their own children if they have offended him or transgressed his laws; and children have been known to ask to be the executioners of their own parents for the most trifling actions, which they only pretend to view as criminal with the hope to please the King, by showing their zeal for his service.

The King is the absolute master of every thing, it is he who judges, commands, and gives sentence; he makes war, and regulates all the affairs of state; his ministers only are authorised to settle minor affairs; the code of laws is in the King's own mind, and his word is a decree; his power extends to the life and death of his subjects.

The people of Madagascar never speak without commencing the conversation by invoking blessings on the King. Even in their lawsuits and their quarrels they always begin with him, and would take the omission of this ceremony very much amiss. The form of words, which may be thus translated, "May King Radama live long, to a good old age, without sickness or other evil," begins and ends every harangue. A bargain made without this formality is frequently annulled, because the party who repents of the agreement may, by this means, escape the fulfilment of it, and the other person dares not complain.

When the King goes out to walk, a numerous guard, mostly armed with guns and spears, and having little bells attached to their girdles, accompanied by a number of women and dancing-girls, follow him, without any regularity, wherever he goes.

The King has generally twelve lawful wives, and with them as many concubines as he pleases. These ladies are carried abroad on the backs of their male slaves, and form a most ludicrous and disgusting procession.

When the King of this country has any thing to proclaim, he sends couriers through all the provinces of his empire to give information that on such a day he will appear in public, to issue orders and regulate affairs. These assemblies are called *Khabars*, an Arabic name, signifying news, or pleadings. The greater part of the male population are expected to be present; they collect first in a large plain north of the capital, called Anduhalu, and long appropriated to these meetings. It forms a kind of amphitheatre, and is sometimes quite covered with men sitting close together on the grass. In this fatiguing situation, exposed to the burning rays of the sun, they often wait for days together the arrival of the sovereign, in order to be informed of his latest intentions. When all the people have collected, the King, clothed in a red cloak, and sometimes an English uniform, proceeds thither from his palace, accompanied by all the officers of his court, his ministers, captains, his guard of Blacks, dancing-women, and several men who blow the Andziva, a kind of large shell, which is used instead of a trumpet, and makes a most hideous noise: all apparelled in their best garments. As soon as the King is observed coming, the people set up shouts of joy, which do not cease till he takes his place on a large table, and sits down on a chair, mounted upon it. Then perfect silence is preserved for a moment, after which all the assemblage, with one voice, call out Trarantitra (good day!). After the King has replied to this, silence again prevails, which is then broken by his Majesty, who, if he be for war, brings with him an assaguay, a buckler, or a small gun, and after having performed some evolutions with these arms, proclaims his intention, and regulates the whole affair. When he ceases speaking, the people cry out Trarantitra as before, after which the chiefs rise, in reply, and often pronounce their harangues with great fluency and astonishing natural eloquence.

I shall leave to philologists the language of Madagascar, which differs in the different provinces, and offers great difficulties to a foreigner; it has some affinity with Arabic and Malay, and many words are purely of the latter tongue, as the numbers, the days of the week and the months, the members of the human body, &c.

A peculiarity in the conversation of the people of Emerina lies in the numerous oaths, *n'Gosse*, which find a place in it; they are intended as attestations of veracity, and may be compared to the *word of honour* among the French. The smallest thing requires asseveration, and is accompanied by a *Gosse*, which is generally by one's father, mother, &c. though long dead, or by the reigning King and his mother; slaves generally invoke their masters, but the *Gosse maffi*, or solemn oath, is, *by the sorcerer of the king*, and in this case they may be severely punished if they do not tell the truth.

In their salutations they are polite, even to annoyance. After having said good day, and informed themselves of the health of the individual addressed, this person thanks them and repeats the same inquiries. Then the first speaker resumes with questions of the well-being of his friend's family, wife, children, brothers, sisters, all of which is returned, and a "live long" finishes the exordium, which frequently occupies a considerable time. The streets of Tannanarivou resound all morning with these salutations.

The man who should be guilty at Emerina of small thefts, or such crimes, is condemned, with his wife and children, to slavery; as well as coiners of false money, or the man who should strike his adversary with a stick armed with iron. The third of the proceeds of the sale comes to the King, and the rest is divided between the judges and accusers. At the commencement of the present reign thieves were often put to death, but his majesty, seeing that this was but a losing affair, preferred the former mode of proceeding, which he continues to this day.

Treason, rape, if committed on women of noble birth, great thefts, and the crime of being the King's sorcerers, are capitally punished. The malefactors are crushed with pieces of rock, speared, and thrown into the ramparts of the town as a prey to dogs and carnivorous birds. During our stay of twelve months, a dozen individuals, both men and women, were put to death. Maroon slaves, who are retaken after making their escape, are severely beaten, bound, and left to lye in places only covered with rice straw and sand, or tobacco is thrown into their eyes, &c.

In 1820, His Excellency Sir R. T. Farquhar, Bart. Governor of the Mauritius and its Dependencies, &c. sent an Ambassador, the present General-agent, James Hastie, Esq., to King Radama, to endeavour to obtain by friendly intercession the abolition of the Madagascar slave trade, which was carried on under circumstances of unequalled cruelty, and the renewal of the treaty of 1817. The treaty was accepted, and ever since that period, this traffic, so detestable in itself, and so degrading to the human race, has ceased to exist. Since that period, the British Government has neglected no means to impart to the Huwa people the comforts and advantages we enjoy: but as it would take much too long to enumerate all the services which Mr. Hastie has already rendered to this country and its inhabitants, I shall only say, that among a great quantity of the animals and vegetables of

Europe, that useful creature, the horse, now appears among the domestic cattle, and is extensively bred in this vast island.

Besides the missionaries and several artizans sent with them from London, many young men of different trades have come over from Mauritius and from France, and are now established at Tannanarivoo, where they work under the protection of the King; who daily becomes more enlightened, and transmits to his subjects a similar taste for our customs: his mind chiefly aiming at the aggrandisement of his own power, and the subjection to his government of the entire island of Madagascar. Thus his attention is principally turned to the formation of an army, as is evidenced by his numerous and well-appointed troops, who accomplished the subjugation of the Saccatawa. In 1822, a levy of 13,000 men was raised, who were put under the management of able officers, long furnished by the English. These soldiers are now capable of executing all the manœuvres, and ere long, it is to be feared that we may see them march in swarms like ants to war, or rather to the desolation of a province, and carnage. The royal guard is well kept up, clad in an English uniform, and very correctly disciplined. The other soldiers are nearly naked, being only girt round the middle with a thin cloth. The generals, captains, &c. wear an uniform and epaulettes, according to their rank. The exercise and manœuvres are English. The art of making cartridges being yet unknown, they put the requisite quantity for each charge into a small bamboo and pour it into the gun. Though these troops be but in their infancy, they cannot be compared to the troops of earlier days. Then the whole nation rose and hurried to arms; multitudes of from 200 to 200,000 men might be seen, undisciplined and without order, marching against their enemies, with assagays and bucklers. So numerous an army soon used to exhaust all the provisions of the country, and a famine was the consequence, accompanied by fever, which committed such fearful ravages, that the roads were covered with the dead and dying.

Perhaps we may be under some error in the character which we shall now give of the population of Emerina, when we speak of their general distrust and aversion towards the white people, and their unfortunate passion for money. But we cannot do otherwise than mention these vices, which were made evident to us by a long residence among the natives, and the seeds of which, unhappily, were fostered by Europeans themselves, who treated them, at the discovery of the island, with unexampled cruelty, and set before them an instance of shameless avarice. Those Europeans, who speak differently on this subject, must either desire to disguise the truth, or they have not had such opportunities of discovering it as we had. If foreigners would hope to be always respected and well treated by these people, they must possess much wealth; as those who travel without ample means are sure beforehand to be, if not despised, yet very indifferently received. The more they have been honoured if supposed to be rich, the more they are contemned if poor; and any service that is done them must be attributed to a well-lined purse, and not to their persons. It is most needful to be on one's guard, for it is rare when an European has trusted a Huwa with money for purposes of trade, that he receives a faithful account of it, and we are well persuaded that very frequently the half is not forthcoming.

As soon as a white person enters a village, the intelligence spreads like lightning, and he is surrounded by a curious multitude. Having entered a house, he is loaded with civilities, the inmates prepare the best lodging, and spread out the finest and cleanest mats for him. Every one hastens to give him a present, consisting of eggs, poultry, manioc, &c., and he will be delighted at seeing fine beef, fresh fish, and rice as white as snow, &c. He is imposed upon by these artifices, which illustrate the old proverb—"Throw out a sprat to catch a whale," for the charge is commonly double and treble the value of the articles, and they expect that this will be readily paid in consideration of the civility they have shown. For once such practices might be borne, but it is the same everywhere, and your desires are officiously fulfilled with the sole intention of cheating you.

As for their general dislike to Europeans, the women who have borne children to white men, when these parents are dead, will treat their unhappy offspring with great unkindness, and prefer those of their children who are of Malagassy origin.

Such are the numerous people who now occupy the great territory of Emerina. We believe we have never departed from truth in our sketches; and if we have been unsparing in our remarks on vice, we shelter ourselves under the maxim of La Bruyère, that "while men practise vice, we should not be weary of reproaching them with it."

The time, however, is not far distant, when we may hope that the exertions of Britons will be crowned with success. The civilization of a nation is a work of time, and the faint twilight must precede the dawn, ere the morning of improvement shall burst into the radiance of the perfect day.

# APPENDIX.

I SHALL conclude our account of this most interesting Island with an Appendix, already promised, respecting the ordeal of the Tanghen, accompanied by a figure, and a botanical description (by Professor Bojer) of the plant. I refer my readers to the *Botanical Magazine, tab.* 2968. for all that was known respecting its history down to the period of its publication. The same kind and enlightened friend, to whom I was indebted for that information, has been good enough to furnish me with what follows, in letters from two missionaries, the first written in 1830, the second in 1831.

## Letter from the REV. J. F. FREEMAN to CHARLES TELFAIR, ESQ., on the subject of the *Tanghen*, *Tanghin*, or *Tanghena* Poison.

PORT-LOUIS, MAURITIUS, 1*st July*, 1830.

MY DEAR SIR,

You are perfectly aware that the *Tanghena* has long been employed in Madagascar as a test in the *native ordeal*, to which persons suspected of witchcraft, or of being bewitched, are subjected. It has been used also to detect the guilt of persons charged more rationally with civil offences, burglary, murder, &c. It is likewise frequently employed in settling litigations as to property, petty larceny, &c., by administering it to the dogs of the parties concerned, and, of course, convicting the owner of the dog killed by the test to the penalties of the law. In some parts of the island, the conviction is made to depend on the life or death of the party drinking the *Tanghena;* if the dose cause death, he is unquestionably guilty;—if he live, his innocence has been demonstrated. But in Emerina, where I have resided for some time, the *Tanghena* forms an ordeal strictly by its operation as a powerful emetic. Its mode of exhibition is this. The accused person having eaten as much boiled rice as possible, swallows, *without mastication,* three pieces of the skin of a fowl, each about the size of a dollar. He is then required to drink the *test,* a small quantity scraped of the *Tanghena nut,* mixed with the juice of *Bananas.* The "Panozondoha" (denouncer of the curse or imprecation), then placing his hand on the head of the accused, pronounces the formula of imprecation, invoking all direful curses on him if guilty. Soon after this, large quantities of rice-water are administered. The contents of the stomach are consequently ejected;—and if, on examination, the three pieces of skin are found, all is well, the party is pronounced "*Madio,*" clean—legally and morally innocent of the charge,—but if otherwise, guilt has fixed its stain, that stain is indelible, and the disgrace incurred is irreparable.

Sometimes the corrosive nature of the poison acts with so great rapidity, that life is destroyed during the ordeal. Should the test have proved the guilt of the party, and yet the *Tanghena* itself not have produced immediate death, he is generally killed by the bystanders, a large club, spear, or the rice-pestle, being used as the murderous weapon, and the brains of the unhappy victim are dashed out on the spot. Strangling is sometimes used, as in an instance just communicated to me by an eye-witness, in which the miserable sufferer was then hurried away, or dragged to a sort of burial before life was quite extinct! In some instances, the guilty are left to perish amidst their excruciating agonies—deserted by every one,—*family, friends, and all!* Slaves, on conviction, are more generally sent to a distance, and sold where no suspicion of their guilty character is supposed to exist. But slaves belonging to any member of the royal family are put to death.

To every humane mind it was highly gratifying to witness the decline of such a barbarous custom during the latter years of the reign of Radama, the late enlightened and enterprising monarch of the country. His successor has, however, encouraged or permitted its revival to a most lamentable extent, —all her principal people—officers, diviners, cursers, and others, to the amount of some hundreds, have been compelled to drink the *Tanghena*, within the last few months, and scores have perished, cut off in the midst of health and vigour—their property confiscated, and their families reduced to ruin and misery! Of one instance I have just heard the melancholy details, from an eye-witness of the tragical scene. An aged widow, upwards of seventy, attended the administration of the ordeal to *five of her children in one day*, all grown up, and having families. The first was proved innocent, the mother rejoiced almost to extasy,—but ere the day had closed she had to mourn in anguish over three cut off out of the five, and their orphan children committed to her feeble care.

I could add more; excuse me for having trespassed thus much on your time, and forgive me in saying, that as I know you have long been the friend of Madagascar (and I know how Madagascar needs the efforts of the friends of humanity), I trust you will continue to countenance every eligible means for rescuing the five millions of inhabitants of the island from such revolting cruelties, and for elevating them to the enjoyment of the benefits of civilization and Christianity.

I am, my dear Sir,

With the utmost cordiality, &c.

J. F. Freeman.

# FACTS AND OBSERVATIONS ILLUSTRATIVE OF THE *TANGHEN.*

*Communicated in a letter to* Charles Telfair, Esq. *by the* Rev. Edward Baker—1831.

The custom of administering the *Tanghin* as an ordeal has become far more universal during the present reign than at any other period of the Huwa Government. When her present Majesty, in the beginning of 1830, carried into effect her resolution of "cleansing her land from sorcerers," an ordeal was commanded in every town and village, and in Tannanarivoo scarcely any class of inhabitants escaped.

On the 9th of March, 1830, in compliance with the Sovereign's mandate, a notable administration of *Tanghin* took place. The accused persons amounted to about 30, including some of the highest in birth and rank in the kingdom. All the nobility recovered, while the unknown plebeians, who, according to the common jugglery, had been compelled to drink with them, died. The former made the usual triumphant entry into the town on the 17th, borne in open palanquins, amid the shouting, dancing, and grimaces of many thousands of the people. This spectacle, considered apart from the horrible superstition that gave rise to it, was truly ludicrous to an European eye. He who has witnessed in England the methods by which a strolling company of mountebanks seek to attract notice, has seen a miniature representation of this Malagassy festivity. A similar gaudy dress, composed of various materials and colours, in some instances dragging on the ground, in others too scanty to cover the body, the same antic movements and unmeaning sounds, accompanied the exhibition in Madagascar; whilst the black or tawny visages, which glared through all other colours, bore no small resemblance to the painted mask of the harlequin fool. The nobility, with their relatives and friends, performed the principal part, and certainly acted the mountebank to admiration. The chief difference lay in the proportion of numbers; for while in England the exhibitors are few, and the staring mob is numerous, here all were engaged, according to their several fancies and abilities, in expressing their uncouth and savage merriment.

In the following month, April, about an equal number of Malagassy ladies submitted to the disgusting ordeal; including the late king's wives, his sisters, and others of the royal family, the wives of the chief officers, and daughters of judges, with a few men, amongst whom was one judge. They all survived, and in due course made a grand entry into town. Various inferior officers and plebeians drank with them, of whom one officer and several common people died.

I cannot here resist giving an anecdote respecting one of these females, showing that the natives are by no means destitute of the sympathies of humanity. Among the ladies was a princess from the Saccatawa country, with the royal family of which Radama had formed an alliance by his marriage with her. She had been treated during his reign with more respect than any other female; but having on one occasion attempted to run away and regain her native country, she had subsequently been closely watched, though not subjected to actual imprisonment. Her establishment consisted of a few Saccatawa servants, and exhibited no kind of pomp. She manifested no particular attachment for any one, and by the continued hostilities that prevailed between the Huwa and Saccatawa powers, all communication with her distant relatives was cut off. Thus defenceless and unprotected, it was absurd to suppose this princess could injure any one, and there was a peculiar severity in her case, as she had no friend to watch over the fairness of the administrator's conduct, or to rejoice in her recovery. She wept bitterly when passing to the place of trial, and it was interesting to observe the sympathy of the natives, who expressed it by what they term "mifady ahitra," or an adjuration of the grass. This is performed by plucking up a piece of grass from the ground, and holding it up, as to express, "May such misfortunes be far from us, as we would avoid treading on the very grass of the village where such sorrow dwells." On the day of the ascent to the town, this princess acted with a dignity quite peculiar to herself. Whilst all the others remained some time in the country to dance, gesticulate, and receive congratulations, she proceeded home without pausing anywhere, her attendants making a mere humming sound expressive of their joy. The Queen showed some good feeling by sending her especial congratulations, saying, that though Radama was gone, *she* would be a mother to her, and never injure her.

In May, after the females had undergone the ordeal, the administrators themselves were compelled to drink along with others, making in all about sixty persons. Two of the former, and two of the common people were victims, and the survivors made the usual triumphant entry.

After these, the Skids, or Diviners, took their turn, several of whom died. One of them having previously adopted my printer as his son, I chance to know the particulars of his decease. His stomach became prodigiously swollen, his legs enlarged, the face was discoloured and distorted, and the substance evacuated by vomiting appeared bilious and bloody: till, after a short time, he expired in great agony, doubtless from the effect of this most potent poison.

The instances that are mentioned above of the ordeal are but a few of such as came under my own immediate observation: in every village similar general drinkings took place, in addition to which, numbers took it at their own houses, and whole families of slaves, without publicity. So numerous were these private administrations, that for some months, wherever I happened to be walking or riding, I perceived the signs of some individuals who either had drunk, or were actually taking the Tanghin. It is also common for the Judges, when a case is of difficult decision, to cause the poison to be administered to both parties, by which numbers are sacrificed. Hence, at the great assembly of judicature, in 1831, where upwards of 500 persons were cited to take their trial, many cases were eventually closed by an appeal to the Tanghin.

The people are by no means contented with this general application of the cleansing process, every one is secretly trembling for himself and his near connexions, and the expence is so ruinous to the majority of them, that many declare it is as well to die as to be accused. The recent unsparing use of Tanghin by the government is contrasted with the conduct of King Radama, whose mode of administration is professedly followed, but who was wont to excuse the young on the ground that "though they might be a little polluted, years would teach them better." Many privately affirm that "the lust of money" is at the root of this custom, and certainly so much wealth accrues at those periods to the persons concerned in laying accusations and administering the poison, that this idea does not appear destitute of foundation. A dollar and 63 cents is the fee given by every individual who recovers, besides many perquisites and private presents. One individual can administer the Tanghin to eight persons in one day, and when the accused dies, the officiating Skid receives $\frac{1}{24}$th part of the whole property not bequeathed before the accusation. One of the administrators came to Mr. Griffiths to request that his son, a scholar, might be allowed to accompany him, and assist in performing the ordeal, assigning as a reason that he might thus get a little money.

The Diviners also reap a large harvest from these iniquitous practices; they attend daily for eight or ten days before and after the drinking takes place, and receive one dollar or many, according to the wealth of the accused, so that with all these concomitant expences, the people may well say, "let us rather die."

Ruthlessness is the characterizing feature of the whole transaction. One of the officers, accused in 1831, was actually watching the corpse of his father when the appointed person knocked at his door. He begged to be excused till after the funeral, declaring that he only asked a few days' delay, and not exemption; none, however, could be granted, and he was dragged from performing the last offices of filial affection, to the scene of ignominious and protracted trial. In another instance, a man was ill of fever and unable to walk, yet no delay was permitted. He drank, and some credit accrued to the Tanghin in consequence, for the violent vomiting and purging cured him completely of the fever, and he made no little boasting of the affair.

In such harsh cases as these, the nearest relative and dearest friend dares not interfere, from the dread of being personally accused of holding league with the guilty, and then being compelled to drink. Mr. Cameron applied to Government to procure the exemption of a youth, on the ground that the Queen's work could not proceed, while the appointed workmen were liable to be so taken away. The reply of the chief officer (Andriamiaja) was, that he could not even protect himself from undergoing the ordeal; but that any accused person might be sent to him, and he would see that no unfairness was practised. Yet instances do sometimes occur where affection has prevailed over superstition. An influential judge was told that with the Queen's approval, all persons, except himself, should drink. Afterwards his daughter, to whom he was strongly attached, was actually included among the accused, and the father protested that should she die, he would never take any part in public affairs again, but leave them to be managed by others as they best could. Fortunately, his daughter recovered.

The deception practised in the whole transaction, is evident to every sensible native. It is well known that the selection of the fruit requires great care, and that a mistake in this respect may destroy the innocent, or save the guilty. Thus the administrators have it in their power to permit any criminal to escape, and for a small reward they often exercise this partiality. They frequently recover slaves, who have been pronounced dead, by giving them copious draughts of water, in which certain herbs, &c. have been boiled. The individuals, so saved, are sent to a great distance and sold, as they cannot be suffered to remain in the place where the ordeal had been administered to them, and they are disposed of as prize property, their own fears preventing them from ever disclosing the transaction to the families of their new masters. Thus, among all the rich nobility, male and female, who drank the Tanghin in 1830, *not one* died. It is equally certain that the administrators can sacrifice whom they please. The fruit, which appears very red, is protested against by the friends of the accused, on the tacit understanding that such a fruit will destroy, whether innocent or guilty. On this account, during the ordeal of 1830, a few of the common people were always seized upon, and compelled to partake with the nobility, and they usually consisted of those who had no relatives or friends to stand by them, in consequence of which two-thirds always died.

It seems to be judged essential in every public administration of the Tanghin, that some should perish, otherwise the judicative virtues of the plant would be considered nugatory. The following circumstance is illustrative of this sentiment. One of the chief officers, during the trials of 1830, had the misfortune to vomit while eating the three spoonsful of rice in token of perfect recovery; he was appointed to drink again in a few days, along with the slave who had carried water for him, and who, it was pretended, had perhaps bewitched him. The officer recovered, but the slave died, such being the common mode of saving the reputation of the fruit.

The uncertainty in the means of judging by the Tanghin is sensibly felt by the natives, and affords a better argument against its use, than any representations of the folly of a belief in sorcery. I may specify the following causes of error in the ordeal. 1. The partiality of the administrators. 2. Their ignorance of the proper fruit. 3. What is called *rainazy*, when the fruit, or rather the superintending power, which is thought to reside in it, is supposed to act with partiality, irrespectively of actual guilt in the accused. 4. By the criminal possessing a charm against the Tanghin. 5. By the presence of some person or charm, obnoxious to the superintending power, which provokes the death of the innocent. 6. By the innocent individual being *azondoza*, that is, held by the power of evil. 7. By the innocent person doing, either wilfully or in ignorance, what the Skid has interdicted, called "*manota fady*."

As to the cause of the different operation of the fruit, sometimes acting as a poison, though generally as an emetic, I am unable to assign it with any certainty. It is known that a difference, visible even to the naked eye, does exist between that which only occasions vomiting, and that which destroys;

the latter always presenting a slight appearance of redness. The people declare that this hue is miraculously assumed, and regard the change as an infallible sign of death to the accused. Yet, if this redness be exceedingly obvious, the relations who are present desire that such a fruit may be rejected, and another chosen; this proposal is probably agreed to, but the next fruit exhibits the same ominous presage, and the victim dies.

Several opinions are held by the natives on this subject. Some say that there are two kinds of trees, one poisonous, the other only emetic: and so similar in appearance, that none but the administrators know the difference, and that even they sometimes err, destroying when they intend to save, and *vice versa.* This may be correct, the appearance only varying as in the sweet and bitter almond; for it is worthy of remark, that any difference of flavour that may exist between the two kinds of fruit, is effectually concealed by the extreme bitterness of the Banana tree juice, in which the Tanghin is exhibited. Notwithstanding, I believe the prevalent, or at least the professed opinion among the natives is that the fruit is harmless, except on occasion of the trial; but such an assertion may arise from fear. It is said that the Tanghin is sweet to the palate and stomach of the guiltless; and I heard a very intelligent native one day, on tasting a nut out of my hand, aver that it was "sweet, very sweet," though to me the flavour was more intensely bitter than any thing I ever tried in my life.

Another opinion is that the fruit undergoes a change by age, when a slight putrefaction or decay takes place, and it becomes red and poisonous at the centre. It then falls from the tree, and is distinguished by being withered, and drawn into wrinkles externally. I incline to think that this is the best founded idea. Some of the Tanghin fruit that I have purchased in the markets is whiter than others, and exceedingly bitter; but I should be sorry to put its poisonous qualities to the test of experience; at least, while residing in this country.

It is extremely probable that many of the sufferers are buried alive; numbers, towards the conclusion of the tragical scene, are strangled or suffocated, the people on such occasions never waiting to finish effectually the dreadful work, but escaping from the house as soon as they imagine the spirit to be departing, lest they should come in contact with it in its flight. It is a fact that the administrators can, and, in the case of slaves, actually do restore the individuals to animation; yet, on other occasions, the unfortunate creatures are either instantly tumbled into a grave, and covered with earth and stones, or they are left in the open air, a prey to the wild dogs, which are continually prowling about at night. Supposing that the sensibility of some, thus prematurely interred, should revive whilst they are under ground, how dreadful must be the horror of such a situation! Borne down by a weight of incumbent soil, which their feeble efforts are quite unable to raise, and breathing for a few seconds the small portion of air that alone can reach them, a flash of recollection but bringing to their minds the scene that has just passed, to oppress them with a sense of that ignominy and horror which the Malagassy people are taught from their earliest infancy to attach to the conviction of sorcery, both the minds and bodies of these wretched victims must be overwhelmed with such intolerable agony, as renders death a happy release.

No less revolting must be the condition of those who are left to the rapacity of the wild dogs. If roused to consciousness by the attacks of these creatures, and possessing sufficient sensibility to understand their condition, yet not strength enough to repel the devourers, how dreadful must it be to resign themselves to be torn piecemeal by the famished animals! The numerous fabulous tales that obtain credit among the natives, of persons recovering after death, and appearing again after burial, &c. probably owe their origin to such reanimations as those which I have described. The natives make it very easy to account for such revivifications, without implicating the virtues of the Tanghin; since they ascribe all wonderful events to the influence of some appropriate charm, and imagine there is a charm or "medicine of life," by the application of which a person recovers, even from death itself.

Many are purposely buried alive in Madagascar. I saw an instance of this from my own house; two men were digging the grave, whilst the victim was partly driven, and partly dragged towards it; on reaching the brink, he was hurled in, and heavy stones dashed upon him to deprive him of sensation before throwing in the soil.

The question as to what constitutes sorcery is enveloped in great mystery, because none can be supposed to know, who are not, either actually or by connivance, guilty. The existence of such supernatural agency is firmly credited by all the Malagassy, not excepting those who have learned and felt most of the power of the word of God. Many will admit that the whole proceeding of the Tanghin ordeal is but a money-getting artifice, yet none will allow that no such thing as sorcery really exists. They aver that incontrovertible proofs can be adduced of persons being bewitched; becoming, without any other assignable cause, either fools or madmen, and acting entirely as if destitute of reason. An instance of this sudden privation of reason occurred among the servants of Mr. Griffiths, in the person of a servant-girl, who was in a state of mental alienation or fascination for some time. She wandered at night among the rocks, that are inhabited by wild cats and owls, and among the tombs, though repeatedly beaten by the watchmen, till at length a man, experienced in charms and medicines, cured her. It is likewise affirmed that many of those who die, confess themselves to have been genuine sorcerers, and compelled by fascination to follow this way of life. The wild cats are said voluntarily to follow such individuals, and the attestations of the dying persons, that they have used no means to attract the creatures, are brought in confirmation of the fact. Such pretended confessions may, however, be induced through a desire of speedy death, as the individuals who avow such practices are immediately sacrificed; or, probably, the disordered state of their minds, affected by the action of the poison, may render them unconscious of what they affirm.

The most common arts of the sorcerers are said to be going out at night, to wander among the rocks and tombs, and to associate with the owls and wild cats. What they do there is not so obvious; but the watchmen who catch and beat them declare that they play with those detested creatures, and give them food; others alleging that the wild animals, on the contrary, serve as a meal to the bewitched persons, who convey them home, and eat them under cover of the night; or that, like Lord Byron's Vampyre, they haunt the tombs to feast on the corpses. It is universally allowed that a strong charm (odymahery) is obtained from the owls and wild cats, by the contact or proximity of which the human race is enchanted and destroyed, and the real fact is probably that some persons do practise the giving of poison, which is thus gratuitously ascribed to sorcery. These enchanters are deemed utter misanthropists, delighting in human sufferings, and frequenting the tombs to triumph over the dead. They aim only at occasioning disease and destruction;—misery is their sphere of existence, which they only live to produce, and in which they delight. An invincible fatality or fascination compels them to this conduct, from which they often, but vainly, desire a release. The power of enchantment is derivable from ancestors, relatives, or friends, and once obtained can never be resigned, nor its practice abjured; but wherever the possessed individuals go, they infallibly seek to bewitch, poison, and destroy. They cast a spell over persons, riches, and possessions, turn prosperity into adversity, embitter all the joys of their victims, and cause every thing to yield but disease, sorrow, and death. A common act of the sorcerers is to poison the water in the pitcher used by an entire family, and thus occasion wholesale destruction; or less frequently to occasion such a wide-spreading disease as shall affect the whole nation. Such is their conduct, in which they are supposed to persevere, till death arrests the career of its over-zealous servants, and puts a stop to its own ravages. There is no limit assigned to the power of sorcery; every evil which the Malagassy feel or fear, which they understand, or do not understand, is ascribed to its influence. The reason assigned for the universal administration of the Tanghin ordeal in 1830, was that Her Majesty was bewitched and rendered ill, and that the death of the sorcerer alone could remove her complaints.

But although no very distinct information can be obtained on what constitutes a proof of sorcery, yet several signs are exhibited after the accusation, to those conversant with the business. It would be tedious to specify many; but generally the following are remarked. The guilty person, on being apprehended, makes a boisterous assertion of his innocence, assuring his friends with the utmost confidence of his approaching escape. Various prognostics that are observed on the way to the place of drinking, are unfavourable to him, as are the answers of divination returned by the Skid. On killing the fowl of which soup is made for the vehicle of Tanghin, its heart is observed to incline to the side, instead of being upright, thus showing that the accused is "malaka," *i. e.* crooked or guilty. The Tanghin turns reddish, instead of being pure white; the vomiting is attended with great pain and difficulty, and the skin is dry; whereas the innocent vomit easily, and perspire freely. Uneasiness and distress mark the whole appearance, the eyes of the sufferer become red and fiery, he is indisposed to eat the rice, and to drink the rice-water; swelling of the body and other unequivocal symptoms of death appear, or if these signs of decease do not come on, the poor wretch is presently killed on the ground of the obvious omens of guilt. Some few, however, escape on the plea that they are "azondoya," or held by the power of evil without being voluntarily culpable, or by allowing what forms indeed an unanswerable argument against the entire system, that perhaps the stomach had consumed or digested the three bits of skin before the vomiting took place, so that the appearance of these pieces, which would furnish an undeniable proof of innocence, is rendered impossible.

It were needless to make many comments on the revolting character of the whole transaction. Its history shows how deeply seated in the hearts of men are the belief and the apprehension of a power superior to their own, while it exhibits a grievous picture of the purpose to which human beings, unaided by the light of revelation, turn such a conviction. How different were the moral and intellectual state of a nation, possessing a true knowledge of the power of the Almighty Creator, and of the infinite wisdom, mercy, and consistency, with which He exercises it! No argument is necessary to prove that our first object among such a people should be to rectify their views of the character and conduct of God; for no degree of ignorance in scientific matters, no intellectual poverty can compare with the effects produced by the dreadful obliquity of their moral sense in these matters. All other deficiencies are light, when weighed against their ignorance of Him, "whom to know is life eternal," and in acquaintance with whom all true wisdom has its beginning.

At present, so deeply rooted in the minds of all the Malagassy, from the Sovereign down to the slave, is the belief in witchcraft, and so blindly are they led by this belief, that the whole nation may be considered as labouring under a spell, as powerful as the fascination which they attribute to the unfortunate sorcerers themselves. My fervent prayer is that the spell may be speedily dissolved, and the fascination disappear before the light of knowledge, and the power of divine truth; and with this prayer do I close my equally true and distressing narration of human folly and superstition.

EDWARD BAKER.

# BOTANICAL DESCRIPTION OF THE TANGHIN, TANGHINIA VENENIFLUA;

*By Professor* BOJER.

### TANGHINIA VENENIFLUA.

The genus *Tanghinia*, to which the fruit belongs whose history has now occupied so many of our pages, was established by Aubert du Petit Thouars, in his "Genera Nova Madagascariensia;" but its character, as well as that of the species, is fully given from the recent plant, in a letter which

accompanied the figure (Tab. CX.), by Professor Bojer, who is of opinion that it is a genus quite distinct from *Cerbera*, to which it has been referred in the Botanical Magazine.

### TANGHINIA, *A. du P. Th.*

*Calycis sepala* 5, patentia, decidua. *Corolla* calyce longior, hypocrateriformis; tubo viridi; fauce subpentagona, dilatata; limbo plano, contorto, 5-lobo, roseo. *Stamina* 5; filamentis dilatatione tubi insertis. *Antheræ* crassæ, cordiformes, intus dehiscentes, superne lamellis foliaceis acuminatis, productione tubi inflexis: *tuberculi* sub quaque anthera umbilicati. *Ovarium* 1, 4-lobum. *Stylus* 1, tubi longitudine æqualis. *Stigma* capitatum, thecis antherarum inclusum. *Fructus* ovatus, drupaceus: *Nux* fibrosa, utrinque acuta, unilateraliter fissa. *Seminis integumentum* membranaceum, fibris tenuibus tunicæ nucis solummodo adhærens. *Albumen* crassum, concavum, (in sicco corneum). *Cotyledones* planæ, tenues, subcordatæ. *Embryo* superus, inversus.—*Bojer.*

Tanghinia *veneniflua.* (Tab. CX.).

Tanghinia veneniflua. *Poiret in Encycl. Bot. Suppl. v.* 5. *p.* 283.

Cerbera Tanghin. *Hooker, Bot. Mag. t.* 2968.

*Arbor* insignis, 30-pedalis et ultra, habitu *Mangiferæ Indicæ*, ubique succo gelatinoso, albo-virescente scatens. *Truncus* rectus, cortice cinereo, lævi, intus albicante, tectus. *Lignum* subflavum. *Rami* inferne horizontales, superne erectiusculi: juniores subherbacei, cinereo-virides, glabri. *Folia* 5–8-pollicaria, ad extremitates ramorum approximata, erecta, coriacea, glabra, nitida, apicem versus bipollicaria, inferne sensim attenuata, margine cartilagineo, revoluto; nervis lateralibus numerosis indistinctis subtus pallidioribus. *Petioli* vix unciam longi, supra plani; ad basin magis minusve incrassati. *Flores* in paniculas terminales subcorymbosas. *Pedunculi* pedicellique bi-ternati ad basin articulati, cylindracei, carnosi, bracteati; *bracteis* 2, oppositis, ovatis, acutis vel obtusis, concavis, deciduis. *Calycis sepala* viridia, erecta, ovata, acuta, glabra, demum patentia. *Corollæ tubus* 8 lineas longus, ad faucem pubescens, carnosus; laciniis horizontali-

patentibus, acutis, læviter undulatis, per æstivationem spiraliter contortis, fecundatione peracta, reflexis. *Fructus* drupaceus, luteus, lævis, hinc plerumque rubro-striatus; carne luteo-virescente, inodora, sapore acri. *Nux* fibrosa, rimosa, fibris lignosis, reticulato-anastomosantibus."—*Bojer.*

TAB. CX. TANGHINIA VENENIFLUA. *Fig.* 1, The corolla laid open to exhibit the insertion of the stamens, and the glands at their base. *Fig.* 2, A stamen more clearly showing the gland at the base, and the appendage at the top. *Fig.* 3, Stamen and upper part of the style, showing how the stigma is sheathed by the anthers. *Fig.* 4, Pistil;—all *magnified.* *Fig.* 5, Fruit. *Fig.* 6, The nut, as it appears when the pulp or sarcocarp is destroyed, the reticulated fibres remaining attached to both extremities. *Fig.* 7, The nut, the fibres being removed. *Fig.* 8, The nut laid open. *Fig.* 9, The seed. *Fig.* 10, The embryo. *Fig.* 11, Embryo with one of its cotyledons removed. *Fig.* 12, Embryo with its 2 cotyledons a little spreading. All from *Fig.* 5, *natural size.*

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## ILLUSTRATIONS OF INDIAN BOTANY; PRINCIPALLY OF THE SOUTHERN PARTS OF THE PENINSULA.

BY DR. ROBERT WIGHT, M.D., &c. &c.

[*Continued from p.* 104 *of the present Volume.*]

### XXXIII.

### LIMONIA MISSIONIS.

Foliis simplicibus ellipticis oblongis brevi-petiolatis, racemis in axillas spinarum folio brevioribus multifloris. (SUPPL. TAB. XXXIII.)

Limonia Missionis. *Wall. Cat. n.* 6358.

Katoo Naruptia. Wild Orange.

A small *tree*, with a round, very branching, bushy head; the *branches* round, smooth, bright green, the older ones armed with numerous large, strong, sharp thorns, the flower-bearing *ramuli* flexuose, with small, straight, axillary spines. *Leaves* alternate, short-petioled, oval, sometimes immarginate and slightly crenate, oftener entire, smooth, coriaceous, dark shining green, mottled with white spots, and perforated with numerous pellucid points. *Racemes* in the axils of the spines, shorter than the leaves, somewhat capitate. *Flowers* numerous, fragrant, pure white. *Calyx* small, 4- or 5-lobed. *Corolla* 4–5-petaled, caducous. *Petals* obovate. *Stamens* 8 or 10, a little shorter than the petals. *Filaments* subulate. *Anthers* erect, large in proportion to the flowers. *Pistil: germen* superior, elevated on a glandular receptacle, globular, 4- or 5-celled, with several *ovules* in each cell, one by one of which usually arrives at maturity. *Style* cylindrical. *Stigma* capitate. *Pericarp* a 4- or 5-celled *berry: cells* containing a very glutinous mucilaginous fluid, and one roundish *seed*, enclosed in a thick, firm, glandular, orange-like fruit.

This tree is found, rather frequently, in sandy soil near the sea-coast, flowering towards the end of the cool season, and ripening its fruit about August or September. The *corolla* falls a few hours after expansion; hence it is difficult to procure specimens in flower. That here figured was gathered about the beginning of March.

SUPPL. TAB. XXXIII. Limonia Missionis. *Fig.* 1, Flower. *Fig.* 2, Section of a scarcely mature fruit. *Fig.* 3, Young seed. *Fig.* 4, Section of a riper fruit. *Fig.* 5, Seed. *Fig.* 6, Section of do.:—more or less *magnified.*

## XXXIV.

## IXORA PARVIFLORA.

TETRANDRIA MONOGYNIA. Nat. Ord. RUBIACEÆ. *Juss.*

Ixora *parviflora;* caule arboreo, foliis cordatis lanceolatis acutis sessilibus glabris, paniculis oblongis brachiatis, segmentis calycinis corollinisque obtusis. (SUPPL. TAB. XXXIV.)

Ixora parviflora. *Vahl, Symb. v.* 3. *p.* 2. *t.* 52. *Willd. Sp. Pl. v.* 1. *p.* 609. *Roxb. Fl. Ind. v.* 1. *p.* 394. *Syst. Veget. v.* 1. *p.* 408. *De Cand. Prodr. v.* 4. *p.* 488.

Adapamarum (*incorrectly named by Ainsley* Soolundie Kuttay, *which is the* Crotalaria juncea.)

A small *tree*, with a thick, bushy head. *Bark* dark-coloured, rough. *Leaves* opposite, decussate, nearly sessile, obovato-lanceolate, pointed, "smooth, shining, firm, entire, from 3 to 4 inches long, and 1½ to 2 broad" (*Roxb.*). The specimens, now before me, have *leaves* 5½ inches long, and 3 broad; and I think I have seen larger ones. The *stipules* appear to be early deciduous, as, out of 4 good specimens, I can only find one perfect pair, and that on a young shoot: all the others have either fallen or withered. They embrace the stem within the petioles, and terminate in a lateral subulate point. *Panicles* large, ovate, terminal, twice or thrice decussate, the branches, branchlets, and peduncles always dividing into threes, the ultimate pedicels being 3-flowered, and form together an exceedingly rich cluster. "*Bracteas*, at the principal divisions, stipulaceous, with 4 subulate processes" (*Roxb.*). This does not accord with my specimens, which have foliaceous bracteas, diminishing in size as they ascend the panicle, and furnished, like the proper leaves, with stipules; the more remote divisions have stipules, but no bracteas. *Flowers* small, white, fragrant. *Calyx* obtusely 4-toothed, very small. *Corolla*, with its *tube*, long and slender: *limb* 4-cleft, the divisions linear, obtuse, reflexed. *Stamens*: *filaments* very short; *anthers* linear and bent back with the segments of the corolla. *Germen* inferior. *Style* filiform, longer than the tube, hairy. *Stigma* 2-cleft. *Berry* generally 2-seeded, 2-lobed, about the size of a pea, black when ripe.

This shrub, or small tree, is met with, occasionally, in the vicinity of Negapatam, in sandy soil, near the coast. It is also extensively distributed over India. In many places the branches are converted into torches, by being first well dried in the oven, and then partly split. They give a clear light, and are very useful to travellers who journey during the night. It flowers in March and February, and ripens its fruit during the hot season.

A concentrated infusion of the bark of this and the *Ixora coccinea*, is used in a gargle for sore gums, incident to old age.

Suppl. Tab. XXXIV. Ixora parviflora. *Fig.* 1, Flower. *Fig.* 2, Part of a panicle with fruit (*nat. size*). *Fig.* 3, Section of a young fruit:—*magnified.*

## XXXV.

## IXORA GRANDIFLORA.

Foliis subcordatis oblongis acutis glabris nitidis sessilibus, cymis subsessilibus trichotomis, corollis acutis, segmentis calycinis acutis post anthesin conniventibus. (Suppl. Tab. XXXV.)

Ixora grandiflora. *Ker, in Bot. Reg. p.* 394. *Spreng. Syst. Veget. v.* 1. *p.* 407. *De Cand. Prodr. v.* 4. *p.* 486.

I. coccinea. *Linn. Sp. Pl. p.* 159. *Willd. Sp. Pl. v.* 1. *p.* 609. *Roxb. Fl. Ind. v.* 1. *p.* 385.

A small *shrub*, with scarcely any trunk, but with many erect divided *branches*, seldom attaining a height of above 6 or 7 feet. *Leaves* opposite, decussate, very short, petioled, very slightly cordate at the base, varying from ovate to obovato-lanceolate, entire, smooth, shining, 3 or 4 inches long, and about ½ as broad, sometimes a little more. *Stipules* between the petioles, a subulate one on each side. *Cymes* terminal, twice trichotomous, *i. e.* dividing into three primary divisions, and each of these again dividing into three, 3- or 4-flowered pedicels. *Flowers* numerous, large, bright scarlet. *Calyx* 4-cleft, or rather 4-toothed; teeth sharp-pointed. *Corolla* with the tube very long and slender, nectariferous; *limb* 4-cleft, with spreading segments, lanceolate. *Stamens* 4: *filaments* very short, inserted on the apex of the tube, bent outwards: *anthers* linear, incumbent. *Style* filiform, longer than the tube.

*Stigma* capitate, 2-cleft at the apex. *Berry* 2-celled; *cells* 1-seeded; *seeds* plano-convex.

This is a common plant on the edges of tanks and water-courses. It is most frequently, however, seen on the edges of the tanks attached to pagodas, where I believe it is planted for the sake of its flowers, which, with many others, are presented at the shrines of the gods. It is in blossom the whole of the cool and rainy seasons.

Suppl. Tab. XXXV. Ixora grandiflora. *Fig.* 1, Flower with the tube laid open. *Fig* 2, Section of a fruit:—*magnified.*

## XXXVI.

## SALACIA LÆVIGATA?

Paniculis axillaribus valde divisis, petalis ciliatis, foliis petiolatis oblongis acutis subundulatis integerrimis glabris subtus scabriusculis, ramis glabris. *DC.* (Suppl. Tab. XXXVI.)

Salacia lævigata? *De Cand. Prodr. v.* 1. *p.* 570.
Tonsella lævigata? *Hoffman.*

A scandent (?) *shrub;* the young *branches* rounded, smooth, cinereous. *Leaves* opposite, shortly petioled, elliptic-oblong, obtusely acuminate, entire or but very slightly crenate, coriaceous, smooth on both sides: a stipulary connecting membrane exists within the petioles. *Pedicels* axillary, panicled. *Panicles* diffuse, dichotomous, considerably exceeding the length of the leaves, and bearing numerous, small, greenish-yellow *flowers.* *Calyx* 5-parted, imbricating, obtuse, and, with the pedicels, villous. *Corolla: petals* 5, very broad at the base, and lying over each other there, slightly undulated on the margin, inserted on the receptacle. Base of the *germen* enclosed in a thick fleshy urceolus, the apex of which forms a disk surrounding the style, and apparently supporting the base of the filaments. *Stamens* 3; *filaments* very broad at the base, somewhat monadelphous, covering the apex of the germen, tapering thence to a point, bearing the reflexed anthers. *Anthers* large, 1-celled, on the very tip of the filaments, and apparently formed by splitting into two laminæ, and forming a bladder (which, while yet distended with pollen, appears 2-celled), 2-lobed, bursting transversely. *Pistil: germen* superior, 3-celled, *cells* many? ovuled. *Style* one, filiform; *stigma* simple, about the length of the filaments. *Fruit . . . ?*

This species differs from the character assigned to the *S. lævigata*, perhaps sufficiently so to constitute a new species. It is a native of dense forests on the sea-coast, near Point Calimere, and extending thence along the shore nearly 40 miles in a westerly direction towards the Tondamaris country, a tract well worthy the attention of the botanist who has time to devote to its examination. The specimens were gathered in January, or beginning of February.

SUPPL. TAB. XXXVI. Salacia lævigata. *Fig.* 1, Flower. *Fig.* 2, Back view of the calyx. *Fig.* 3, Back view of the stamen. *Fig.* 4, Section of the 3-celled germen, with 2 ovules in each cell:—*magnified.*

## XXXVII.

## CADABA TRIPHYLLA.

Foliis palmato-trifoliolatis, foliolis subellipticis obtusiusculis subemarginatis.

Oothie Peralie. *Tamul.*

A rigid, ramous *shrub: bark* brown, speckled with small white tubercles; young shoots, petioles, and peduncles scabrous. *Leaves* petioled, palmato-3-foliate. *Petioles* varying considerably in length, but always shorter than the *leaflets,* rounded, scabrous, particularly on the upper surface: *leaflets* between elliptic and lanceolate, retuse or emarginate in a slight degree, otherwise entire, smooth, coriaceous, somewhat veiny and reticulated. *Racemes* terminal, bearing several large, long-pedicelled, pale yellowish-white *flowers. Calyx* 4-leaved, two of the leaves much larger, boat-shaped, obtuse; the smaller pair within scarcely half their size, and of a more membranaceous texture. *Corolla* 2-petaled; *petals* orbicular, elevated on a long slender claw, slightly waved round the edge. *Nectary* springing from the base of the *torus*, funnel-shaped, the *limb* divided on one side, and folded back, bright yellow. *Stamens* 6: *filaments* monadelphous at the base, and embracing the base of the *stipes* (thecaphore, DC.), which they exceed in length. *Anthers* oblong, incumbent, cordate. *Pistil: germen* cylindrical, supported on a slender stipe. *Style* none. *Stigma* blunt. *Fruit . . . ?*

I am uncertain of the exact habitat of this plant, but I think it came from the jungles of the Tandemans country. The specimens were gathered in February, but without fruit. The figures and descriptions are taken from small specimens only. I have not myself met with the plant growing, nor have I ever seen the fruit.

Suppl. Tab. XXXVII. Cadaba triphylla.

## XXXVIII.

## CONVOLVULUS TURPETHUM.

Foliis cordatis angulatis integrisque obtusiusculis mucronatis pubescentibus, pedunculis folio brevioribus, bracteis 2 magnis tubum corolla fere æquantibus, caule alato. (Suppl. Tab. XXXVIII.)

Convolvulus Turpethum. *Linn. Sp. Pl. p.* 221. *Willd. Sp. Pl. v.* 1. *p.* 859. *Roxb. Fl. Ind. v.* 2. *p.* 57. *Spreng. Syst. Veget. v.* 1. *p.* 598.

Shevadia Kodie.

*Stems* twining or procumbent, according to circumstances, with 3 wings, smooth. *Wings* decurrent from the petioles. *Petioles* flattened above, and slightly winged on the edges, pubescent, about 1½ inches long. *Leaves* broadly suborbicular, cordate, entire, obtuse, but mucronate—or they are ovate and angled, sometimes even hastate, the veins beneath prominent and reticulated, softly pubescent; above a little harsh, from the hairs being shorter and stiffer. *Peduncles* axillary, round, pubescent, varying in length, but usually longer than the petioles: at first 2- or 3-flowered, but afterwards increasing in number, owing to the lateral pedicels becoming proliferous and giving off fresh ones. *Bracteas* large, membranaceous, deciduous. *Calyx* 5-parted, outer segments much larger than the others, concave, entire, villous, mucronate, speckled within with numerous black spots. *Corolla* white: *tube* short, contracted at, and nearly closed by, the *filaments*, which are much enlarged and hairy. *Filaments* short: *anthers* oblong, spirally twisted after shedding their pollen. *Style* filiform, longer than the stamens. *Stigma* capitate, 2-lobed. *Capsules* stipitate, 2-celled, 4-seeded, enclosed in the greatly enlarged, and now smooth greenish-white *calyx*. In its junior state the apex is covered with a green scale, which drops as it approaches to maturity, leaving the capsule transparent in the place it occupied.

This is esteemed by the natives nearly as active as jalep (as a cathartic). I have never prescribed it, and cannot speak from my own observation; but I have ordered some to be procured, with the view of making experiments.

SUPPL. TAB. XXXVIII. Convolvulus Turpethum. *Fig.* 1, Stamens and base of the corolla. *Fig.* 2, Capsule with its green scale. *Fig.* 3, Capsule from which the scale has fallen:—*natural size.*

## XXXIX.

## GLYCOSMIS TRIPHYLLA.

Foliolis ternis ellipticis obtuse acuminatis integerrimis glabris, staminum filamentis medio non incrassatis. (SUPPL. TAB. XXXIX.)

Coungey. *Tamul.*

A ramous leafy *shrub*, from 3 to 5 feet high, with scarcely any trunk. *Bark*, of the larger branches, brown, of the small ones cinereous: the very young shoots frequently clothed with rusty down. *Leaves* unequally pinnate: *leaflets* alternate; 2 or 3, rarely 4, elliptic, very broad in the middle, rapidly tapering towards both ends, and terminating in a short, obtuse, sometimes emarginate, acumen, quite entire, smooth, coriaceous, usually mottled above with dirty whitish spots, from 3 to 4 inches long and about 2 broad. *Racemes* axillary and terminal, shorter than the leaves, usually compound, subcapitate; the *rachis* ferruginous, furnished at its divisions with small bracteas. *Calyx* very small, 5-parted, persistent. *Corolla: petals* 5, obovato-lanceolate, many times larger than the calyx. *Stamens* 10, inferior *filaments* about the length of the petals, a little flattened at the base, and tapering equally to a point, not inserted into a nectarial ring nor swollen in the middle as in *G. pentaphylla*, but alternately into the base of the petals, and upon 5 intermediate glands, which surround the pedicel of the germen. *Pistil: germen* superior, pedicelled, 5-celled, not surrounded at the base by a disk. *Style* none, or at least not to be distinguished from the germen. *Stigma* obtuse, somewhat umbilicate. *Fruit*, a berry about the size of a large pea, containing, when ripe, a single round *seed*, sometimes 2 seeds.

This plant is a native of the sea-coast, growing in hedges and thickets. I have only met with it in the Tanjore country; but I am far from thinking that its geographical range is so limited, since it is only lately that I ascertained it to be a species distinct from the *G. pentaphylla*, which it much resembles. I consequently may often have passed it as such without observation. Like the *G. pentaphylla*, the flowers are remarkably fragrant, a property which they retain a long time, if dried and moistened again. The smell of some specimens that have been many months in my herbarium became as fresh as the day they were gathered, on being put into water for a few seconds. It differs from the *G. pentaphylla* in wanting the nectarial ring, into which the stamens and petals of that species are inserted, in the absence of the swelling on the filaments, in the germen being pedicelled, in the want of the style, and in the stigma being entire and not 3-cleft, as represented in Roxburgh's figure, though not mentioned in his description. The leaves differ in form, and in the number of leaflets.

Suppl. Tab. XXXIX. Glycosmis triphylla. *Fig.* 1, Flower laid open. *Fig.* 2, Calyx, nectariferous glands, and the dissected germen. *Fig.* 3, Fruit cut through horizontally. *Fig.* 4, Seed :—*magnified.*

## XL.

## JUSSIÆA REPENS.

Herbacea, repens, glabra, foliis oblongis obovalibusve retusis petiolatis, floribus longe pedicellatis ovario cylindraceo pubescenti basi bituberculato attenuato, lobis calycinis 5 lanceolatis acutis petalis obovatis duplo brevioribus. (Suppl. Tab. XL.)

Jussiæa repens. *Linn. Mant. p.* 381. *Willd. Sp. Pl. v.* 2. *p.* 574. *Hamilt. in Linn. Trans. v.* 14. *p.* 205. *Spreng. Syst. Veget. v.* 2. *p.* 232. *De Cand. Prodr. v.* 3. *p.* 56. *Rheede, Hort. Malab. v.* 2. *p.* 51.

Ponnellia Kadie. *Tamul.*

*Roots* fibrous. *Stems* herbaceous, creeping or floating, if growing in water, rounded, smooth, rooting, and, when floating, furnished with tufts of light cellular bodies, which serve to render them buoyant. *Leaves* obovate, decurrent on the petiole, entire, transversely nerved, smooth, of a bright shining green above, marked with paler lines in the place of the nerves. *Peduncles* axillary, varying much in length, generally shorter than the leaves, but sometimes much longer, as in the accompanying figure. *Flowers* large, cream-coloured. *Calyx* cylindrical, the *tube* adherent with the ovary, attenuated at the base, and furnished with two small fleshy tubercles, the *limb* cut into 5 lanceolate, acute, spreading 3-nerved lobes. *Corolla : petals* 5, obovate, emarginate, mucronate, deciduous, marked near the base with a yellow spot. *Stamens* 10 : *filaments* subulate, about half the length of the corolla, those between the petals attached to 5 yellow glands. *Anthers* oval, 2-celled. *Pistil: germen* inferior, cylindrical: *style* a little longer than the stamens: *stigma* capitate, 5-furrowed: *capsule* cylindrical, 5-celled, each cell containing a single row of *seeds:* there is a large pore between each pair of cells.

This beautiful plant is usually found near water, or floating on its surface often to a great extent; it, however, roots readily in soil, if that soil be moist. Its blossoms expand in the course of the night or early in the morning, and, long before evening, there is scarcely one to be seen, particularly during clear weather. In the northern provinces of India it is comparatively rare: in the southern it may be found in almost every tank.

SUPPL. TAB. XL. Jussiæa repens. *Fig* 1, Immature capsule cut through transversely:—*magnified.*

## XLI.

## PONGAMIA RELIGIOSA.

Volubilis, foliolis uni-bijugis cum impari ovato-oblongis acuminatis glabris. (SUPPL. TAB. XLI.)

Pongamia religiosa. *De Cand. Prodr. v.* 2. *p.* 416.

Galedupa religiosa. *Roxb. Cat. Calc.* 53.

Robinia religiosa. *Willd. Sp. Pl. v.* 3. *p.* 1133. *Smith in Rees' Cycl.—Pers. Syn. Pl. v.* 2. *p.* 311.

Tephrosia religiosa. *Spreng. Syst. Veget. v.* 3. *p.* 232.

A twining ramous *shrub;* the *trunk* and *branches* rounded: *bark* rough, brown, tuberculated, flower-bearing. *Ramuli* smooth and green. *Petioles* alternate, elongated, smooth, except at the base, which is enlarged and wrinkled. *Leaves* pinnate; *leaflets* one or two pairs and an odd one, smooth, bright green, oval, oblong, obtusely acuminate, retuse, or emarginate at the apex. *Flowers* on long axillary *racemes,* bearing near the base a smaller bracteal (?) leaf: partial *peduncles* 3 or 4-flowered. *Flowers* numerous, pure white. *Calyx* cup-shaped, truncated, obsoletely 5-toothed. *Corolla* papilionaceous. *Petals* on short claws. *Vexillum* orbicular, erect, or slightly reflexed.

*Wings* oblong, adhering to the larger semicircular *keel.* *Stamens* monadelphous, the anterior one shorter, free above and below, but adhering near the middle of the tube. *Anthers* small, ovate. *Pistil: germen* compressed, slightly hairy above. *Style* longer than the stamens. *Stigma* capitate. *Legume* compressed, orbicular, wrinkled, 1-seeded.

This shrub is a native of saline swamps, most frequent among the *Acanthus ilicifolius;* but when it happens to grow near trees, it invariably finds its way to the top of them. The trunk, however, does not increase in thickness in the same proportion, being rarely more than five or six inches in circumference, so far, at least, as I have had opportunities of observing the plant. It is in flower most part of the year, but produces fruit very sparingly. It is found near Negapatam, rather abundantly on the banks of rivers, thriving both in fresh and salt water.

SUPPL. TAB. XLI. Pongamia religiosa. *Fig.* 1, Flower. *Fig.* 2, Stamens and pistil (the calyx bent back):—*magnified.*

## CONTRIBUTIONS TOWARDS A FLORA OF SOUTH AMERICA AND THE ISLANDS OF THE PACIFIC; BY W. J. HOOKER, LL.D. AND G. A. W. ARNOTT, ESQ. A.M. F.R.S.E.

[*Continued from Page* 129 *of the present Volume.*]

SINCE the publication of our first Memoir on the present subject, our Herbaria have been enriched by some interesting plants of the Andes of Quito, from Professor William Jameson and Colonel Hall of Quito, already alluded to in the present volume, by a considerable collection from Buenos Ayres and the Uraguay, received from Mr. Tweedie, and by another from Chili, made by Mr. Bridges, chiefly in the Cordilleras.

The Botany of Chili, and Science in general, have sustained a great loss in the death of the enthusiastic Bertero. Apprehensions, and very serious ones, too, were long entertained respecting his fate; and information had reached us in the early part of the present year (1832), of which later accounts from other correspondents have confirmed the correctness, and we, therefore, do not hesitate about giving the following extract of a letter from our valued friend, Alexander Caldcleugh, Esq. dated St. Jago de Chile, 17th Dec. 1831. "I am most sorry," he says, "to make known to you the fate of poor Bertero. After the voyage which he made with me, last year, to the island of Juan Fernandez, where he collected with great zeal, and found many interesting things, and some new Genera, (amongst them five of the *Cichoraceæ*, tolerably large trees with hollow stems),—he remained in Valparaiso for three months, for the purpose of arranging and despatching his plants to Paris. At this time a vessel offered to Tahiti, and, led on by that powerful thirst for botanical science, which I have no where seen surpassed, he embarked in her, and remained ten weeks collecting in that island, and then took a passage to return to Valparaiso, with a valuable collection in a new Tahitian schooner, which sailed about eleven months ago, and has not since been heard of. Such has been the result of the inquiries I was induced to make, from the circumstance of my finding no letters lying for me at his agents, on my late return to Chili; and I was led to believe that his plans were to remain some time longer collecting in this country. He has left no plants here, and I am sure you will regret his loss exceedingly, for had he lived he would have done a great deal more to extend our knowledge of the Flora of this most interesting portion of South America."

We have reason to be satisfied, from what has been published by his friends at Paris of some portion of his collections (in the *Annales des Sciences Naturelles*), that the whole of them have fallen into good hands; and we are sure that our learned friends, Adrien de Jussieu* and Guillemin, will do ample justice to the memory of this eminent and lamented traveller.

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* This most able Botanist, in a late No. of the "Annales," has published an account of some new Genera from Bertero's collections, and though, probably,

385. (1.) Kageneckia *oblonga*, R. et P.—K. cratægoides, Don *in Ed. New Phil. Jour. n.* 23. *p.* 111.—Lydæa Lyday Mol. *Chil.* (*ed.* 2), *p.* 300.—Chili; San Gabriel and Collina, *Dr. Gillies.* Valparaiso and Quillota, *Bridges,* 1832 (*N.* 240.) Valparaiso, *Cuming* (*N.* 776.)—Cordillera of Chili, *Cuming* (*N.* 264.) Baths of Collina, *Macrae.*—Nom. vernac. *Guayo Colorado,* R. et P.; *Lyday,* Mol.; *Bollen,* Dr. Gillies. The serratures of the leaf are not obtuse, as they are usually described, but they sometimes appear so by the glandular tip falling off. We agree with Kunth that the genus is diœcious, and not polygamous, the stamens that accompany the germens being certainly sterile. Don's character "floribus solitariis" (*Ed. N. Phil. Journ. No.* 20. *p.* 231) is taken solely from the female flowers: his *K. cratægoides* being the male, in which, as Kunth states, the flowers are corymbose.

386. (2.) Kageneckia *angustifolia*, Don. *l. c.*—Cordillera of Chili, *Cuming.* (*N.* 311.) *Bridges,* 1832—(*N.* 241.)—Ten to fifteen feet high (*Bridges*).

387. (1.) Quillaja *saponaria,* Mol. (*descr. pessim.*)—Q. Smegmadermos, DC.—Q. Molinæ, DC.—Smegmadermos emarginatus, R. et P.—Chili, *Dr. Gillies.* Andes of Chili (1st and 2d ranges), *Cuming* (*N.* 161).—Quepuy and near Quillota, *Bridges,* 1832 (*N.* 395). Baths of Collina, *Macrae.* Nom. vernac. *Quillai.* The specimens from Dr. Gillies are in fruit, and have solitary

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our plate and description were first prepared of *Bridgesia spicata,* yet we are anxious to declare that the right of priority from publication belongs to M. de Jussieu, and that the name we had imposed must, on that account, give place to *Ercilla volubilis, Juss.* It is satisfactory to find how nearly our respective figures and descriptions accord, whatever difference of opinion there may be, in regard to the Natural Order to which the Genus should be referred. We have considered it to belong to *Rutaceæ.* Jussieu inclines to place it with the *Menispermeæ;* and Mr. Don, in Jameson's Ed. Phil. Journ. for October, 1832, among the *Phytolacceæ.*

flowers with almost entire and emarginate leaves, as in Mr. Bridges' specimen; those from Cuming have fertile stamens, corymbose flowers, and leaves that are coarsely and bluntly toothed. Mr. Don (l. c.) describes another species, *Q. petiolaris,* of which Cuming had only one or two fragments, without flower or fruit, and which was not generally distributed; but this supposed species we have ascertained to be our *Azara Gilliesii* (huj. op. n. 65) from an inspection of a leaf transmitted us by Mr. Don.

388. (1.) Geum *Chiloense,* Balb.—G. coccineum, Ser. in *De Cand. Prodr. v.* 2. *p.* 551, not of Smith and Sibth.—G. Quellyon, Sweet.—Quebrada de Fray Carlos, Andes of Chili, *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 563). *Bridges,* 1832 (*N.* 212.) *Macrae.* Conception, *Messrs. Lay* and *Collie.*—Nom. vernac. *Quellyon.*

389. (1.) Comaropsis *radicans,* De Cand.—Rubus radicans, Cav. *ic.* 5. *t.* 413.—Chiloe, *Cuming* (*N.* 37.)—This scarcely agrees with the character of *Comaropsis,* and may perhaps be replaced in *Rubus.*

390. (1.) Fragaria *Chilensis,* Ehrh.—Conception, *Messrs. Lay* and *Collie. Cuming* (*N.* 816.)

391. (1.) Alchemilla *arvensis,* Scop.—Concon in Chili, *Bridges,* 1832, (*N.* 524.)—Perhaps introduced.

392. (1.) Margyricarpus *setosus,* R. et P.—Maldonado in the Banda Oriental, Pampas of Buenos Ayres, and Province of Cordova, *Dr. Gillies.* Banda Oriental, *Tweedie.* Valparaiso, *Mathews; Cuming* (*N.* 763.) Juan Fernandez, *Cuming,* (*N.* 1327); *Bertero.*

393. (2.) Margyricarpus *alatus,* (Gill. *mst.*); petiolis valde spinescentibus, ramulis novellis brevibus axillaribus foliosis, foliolis deciduis oblongis rigidis mucronatis margine revolutis, fructu 3–4-alato, alis latis membranaceis.

—El Cerro del Morro, Province of San Luis, and Chili, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 254.) Bella Vista de Aconcugua, *Bridges*, 1832. (*N.* 298.) Baths of Collina, *Macrae.*—In *M. setosus* the fruit is furnished with a strong rib, running down from the centre of each calycine segment, which, moreover, is provided with two or three processes or teeth; the lower being patent and blunt, the upper one erect and sharp, as is usually noticed in the generic character. In the present species these ribs and teeth are replaced by membranaceous wings, one of which, however, is frequently abortive. The cotyledons are large, flat, and foliaceous; the radicle straight and superior, nearly half as long as the cotyledons.

394. (1.) Acæna *splendens*, (Hook. et Arn.); tota sericeo-lanata, floribus 3–4-andris in spicam laxam elongatam dispositis, fructibus magnis ovoideis tomentosis, aculeis elongatis glochidiatis numerosis, caule erectiusculo, foliis ad basin caulis confertis sub-3-jugis, foliolis elliptico-oblongis apice dentatis.—Cordillera of Chili, *Cuming* (*N.* 299); *Bridges*, 1832, (*N.* 3.) who finds it also at Sierra Bella Vista, Aconcugua.—The leaves are covered on both sides with beautiful long silky shining hairs, which are close-pressed: those on the stem are more patent and woolly. Between the leaves and the spike occurs sometimes one, or at most two, distant minute trifid leaves or bracteas.

395. (2.) Acæna *integerrima*, (Gill. *mst.*); tota sericeo-lanata, floribus in capitulum globosum dispositis unico alterove distante, ovario aculeis brevibus glochidiatis, caule cæspitoso prostrato, foliis sub-radicalibus confertis 4-jugis, foliolis ovato-oblongis integerrimis vel apice 2–3-dentatis, unico caulino plus duplo minore.—Near El Arroyo de los Portreros, Andes of Mendoza, *Dr. Gillies.*—This seems to differ from the last species in its smaller size, and, according to Dr. Gillies, in its prostrate stems. The specimens are only in flower, but these flowers are much smaller than in *A. splendens*, and

we cannot say to which section of the genus it belongs. If future observations should prove that the capitate floral infloresence lengthens into a spike, then there is scarcely sufficient character to distinguish it from *A. splendens.*

396. (3.) Acæna *cæspitosa,* (Gill. *mst.*); floribus in capitulum globosum dispositis, unico distante vel nullo, fructibus ovatis glabris breviter undique aculeatis, caule cæspitoso erecto, foliis congestis sub-radicalibus utrinque sericeis subtrijugis, foliolis inferioribus bi-trifidis superioribus integris segmentis integerrimis linearibus minutis.—El Paramillo de las Cuevas, and El Alto de la Laguna, Andes of Mendoza and Chili, *Dr. Gillies.*—This has precisely the habit of *A. trifida.*

397. (4.) Acæna trifida, R. et P. *Fl. Per. v.* 1. *t.* 104.—*α. nudiuscula.* A. pinnatifida, *Lindl. Bot. Reg. t.* 1271.—Valparaiso, *Cuming* (*N.* 493,) *Bridges,* 1832 (*N.* 1.)—*β. sericea.* Conception, *Messrs. Lay* and *Collie.*

398. (5.) Acæna *pinnatifida,* R. et P. *Fl. Per. v.* 1. *t.* 104.—*α.* caule sericeo-tomentoso, foliorum segmentis latioribus.—A. incisa, *Lindl. Bot. Reg. sub fol.* 1271.—Cordillera of Chili, *Cuming* (*N.* 301.) Mountains of Quillota, *Bridges,* 1832 (*N.* 2.)—*β.* caule sericeo-tomentoso, foliorum segmentis angustis.—A. Andicola, Gill. *mst.*—Los Palomares, and both sides of El Planchon, Andes of Mendoza and Chili, *Dr. Gillies.*—*γ.* caule subglabro, foliorum segmentis angustis.—Conception, *Cuming* (*N.* 145.) Valparaiso, *Bridges.*

399. (6.) Acæna *cuneata,* (Hook. et Arn.); floribus in spicis globoso-ovatis paucis distantibus aggregatis, fructibus undique breviter aculeatis, caule decumbente basi folioso, foliis sub 5-jugis, foliolis cuneato-obovatis utrinque sericeis apice præcipue inciso-dentatis.—Cordillera of Chili, *Cuming* (*N.* 300.) Near Los Ojos de Agua, and Cordillera, *Bridges,* 1832, (*N.* 4.)

400. (7.) Acæna *myriophylla,* Lindl. in *Bot. Reg.* sub fol. 1272.—*β. compacta.*—*α* and *β.* Pampas of Buenos Ayres, *Dr. Gillies ; Tweedie.*

401. (8.) Acæna *adscendens*, Vahl.?—A. Grahamiana, Gill. *mst.*—El Valle de Uspallata, Los Palomares, and banks of El Rio de los Horcones, Andes of Mendoza, *Dr. Gillies.* Los Ojos de Agua, *Bridges*, 1832, (*N.* 522.) Cordillera of Chili, *Cuming* (*N.* 233.)—In specimens from Chili the leaflets are furnished with a few silky hairs beneath, particularly on the veins; and the younger leaves are even more decidedly silky. In specimens from our gardens they are evidently glabrous; hence arise our doubts as to the identity of the species, but we can perceive no other difference. Sometimes the leaves are interruptedly pinnate. The capitulum is solitary, perfectly globose, and apparently diœcious.

402. (9.) Acæna *argentea*, R. et P.—Proquin, *Feuill. Chil. v.* 3. *t.* 41.—Conception, *Messrs. Lay* and *Collie.* Maule Province, *Cuming* (*N.* 844, 845 in fr.)

403. (10.) Acæna *Magellanica*, Vahl.—Province of Maule, *Cuming* (*N.* 843.)—Our specimen has thin leaves, which are almost entirely obovate. This and the two preceding have the capitulum solitary, perfectly globose, and apparently diœcious. The awns on the calyx of *A. Magellanica* and *A. argentea* are of a deep rich brown, those of our *A. adscendens* of a yellowish or slightly tawny colour.

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404. (1.) Fuchsia *rosea*, R. et P.—F. lycioides, Andr.—Lun, *Feuill.*—Concon in Chili, *Dr. Gillies.* Valparaiso, *Mr. Cruckshanks*; *Mathews* (*N.* 286); *Cuming* (*N.* 770.)

405. (2.) Fuchsia *spinosa*, *Presl*, *Reliq. Hænk. v.* 2. *p.* 26. *t.* 51.—Coquimbo, *Cuming* (*N.* 896.)

406. (3.) Fuchsia *macrostemma*, R. et P.—*α. grandiflora.*—F. coccinea, Cav. *ic. v.* 6. *p.* 17 (nec alior.)—F. decussata, Graham, Sims, (non R. et P.)—F. gracilis, Lindl.—Thilco, Feuill.—*β. parviflora*, staminibus brevibus, stigmate magno globoso.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Mathews* (*N.* 237); *Cuming* (*N.* 443); *Bridges*, 1832, (*N.* 198.) Chiloe, *Lieut. E. Bayley.* El Valle del Rio Claro, near El Planchon,

Chili, *Dr. Gillies.*—*β.* Valparaiso, *Bridges,* 1832, (*N.* 199.)—This may, we think, be distinguished from *F. coccinea,* which we have never seen from Chili, by the leaves, which are glabrous and crenate at the base, and by the elongated germens and fruit. *F. conica,* Lindl. Bot. Reg. t. 1062, is probably the same as our var. *β.*

407. (1.) Epilobium *alpinum,* Linn.—E. pusillum, Gill. *mst.*—El Cerro de la Polcura and El Cerro de San Pedro Nolasco, Andes of Mendoza and Chili, *Dr. Gillies.*—Of the present we have only seen the fruit and one flower-bud: in every point agreeing with our Scotch specimens. The fruit is certainly pedunculated and not sessile as Lehman describes it in *Hook. Fl. Bor. Am. v.* 1. *p.* 205.

408. (2.) Epilobium *pedicellare,* Presl, *Relig. Hænk. v.* 2. *p.* 30. E. tetragonum, Linn.?—E. Arnottianum, Gill. *mst.* E. Andicolum, Gill. *mst.*—E. denticulatum, R. et P.?—La Cienega de las Serrajas and El Valle de Uspallata, Endes of Mendoza; El Cerro de San Pedro Nolasco, Andes of Chili; *Dr. Gillies.* Valparaiso and Quillota, *Bridges,* 1832, (*N.* 179.)—What Dr. Gillies calls *E. Arnottianum* is alone in a state for examination. The stigma and petals are as in Europæan specimens; the calycine segments lanceolate, acuminated, and marked with small pellucid lines. We cannot for a moment doubt that the Chilian specimens, at least, described by Ruiz and Pavon, belong to this species, although the plant be not at all suffruticose, as they describe it, but which is not so represented.

409. (3.) Epilobium *puberulum,* (Hook. et Arn.); puberulum, caule virgato ramoso, ramis strictis erectis simplicibus, foliis inferioribus oppositis superioribus alternis lineari-lanceolatis acutis denticulatis obscure pellucido-lineolatis, laciniis calycinis lanceolatis, stigmate indiviso clavato.—Chiloe, *Cuming* (*N.* 36.)—Its affinity is great with *E. palustre,* from some specimens of which it seems only to differ by the pubescent leaves.

410. (1.) Œnothera *dentata, Cav. ic. v.* 4. *p.* 67. *t.* 398.—Chamissonia flava, Link.—Onosuris Chamissonis, De Cand.—Conception, *Messrs. Lay* and *Collie ; Cuming* (*N.* 116.) Valparaiso, *Cruckshanks ; Bridges,* 1832, (*N.* 330.) ; *Cuming* (*N.* 739.)—What we have received from gardens under the name of *Œ. hirta,* Link, has broadly lanceolate leaves.

411. (2.) Œnothera *Mendocinensis,* (Gill. *mst.*) ; annua, pubescenti-hirsuta, caule erecto, foliis linearibus acutis subundulatis inæqualiter dentatis, staminibus erectis petala calycemque erectum æquantibus, stigmate lobis breve cylindraceis, floribus parvis flavis, fructibus elongato-cylindraceis hirsutis sulcatis folio sub-brevioribus.—Los Chacayes, Melocoton, and La Capillas, Andes of Mendoza, *Dr. Gillies.*—We possess a plant from Mr. Tweedie, from Arroyo de las Vacas, which does not appear to differ as a species, but in which the stem seems to be decumbent at the base.

412. (3.) Œnothera *longiflora,* Jacq.—Woods of Entre Rios, *Tweedie.*

413. (4.) Œnothera *mollissima,* Linn.—Œ. nocturna, Willd. *herb.* (ex Spreng.), et Hortulan.—Conception, *Messrs. Lay* and *Collie ; Cuming* (*N.* 120.)—We thus name Cuming's plant, as well as almost every one we have seen in British gardens called *Œ. nocturna :* it varies much in pubescence, but the long filiform stigmas seem constant, and form the principal difference between it and the following: what we have obtained under this name in France, particularly from Audibert's garden at Tarascon, is, we think, *Œ. albicans,* Lam.

414. (5.) Œnothera *odorata,* Jacq.—Œ. undulata, Ait.—Œ. mollissima, *Hook. et Arn. in Bot. Beech. Voy.*—San Isedro, El Cerro del Diamante, and elsewhere on the mountains and valleys of the Andes of Mendoza ; abundant also at Concon in Chili, *Dr. Gillies.* Juan Fernandez, *Bertero ; Dr. Scouler.* Valparaiso, *Cuming,* (*N.* 551.) Conception, *Messrs. Lay* and *Collie.*—The pubescence on the leaf, both in this and the last, sometimes

almost entirely disappears. It is Feuillée's "Onagra, vulgo Mithon," *Chil. v.* 3. *t.* 34.

415. (6.) Œnothera *tenella,* Cav. *ic. v.* 4. *p.* 68. *t.* 396. *f.* 2. Onagra, vulgo Innil, Feuill. *Chil. v.* 3. *t.* 34.—Conception, *Messrs. Lay* and *Collie ; Cuming* (*N.* 815.) Baths of Collina, *Macrae.* Valparaiso, *Mathews* (*N.* 191.) ; *Mr. Cruckshanks ; Cuming* (*N.* 522, 755.)—In Dr. Hooker's specimen of Cuming's *N.* 755, the flowers are very small, and of a black purple colour.

416. (7.) Œnothera *tenuifolia,* Cav.—Onagra, Linariæ folio, Feuill. *Chil. v.* 3. *t.* 34.—Valparaiso, *Bridges,* 1832, (Cum. *N.* 329.)—This may prove, as it seems to be considered by Mr. Bridges, merely a more narrow-leaved and slender state of *Œ. tenella.*

417. (8.) Œnothera *acaulis,* Cav. *ic. v.* 4. *p.* 68. *t.* 399.—β. Œ. grandiflora, R. et P.—α. Valparaiso, *Mathews,* (*N.* 169.) *Cuming* (*N.* 477.) ; Coquimbo, *Macrae.*—β. Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Bridges.* Sandy shores of the Parana, 400 miles above Buenos Ayres, *Tweedie.*

418. (9.) Œnothera *subulata,* R. et P.—α. foliis lineari-lanceolatis patentibus molliter villosis. Œ. cæspitosa, Gill. *mst.*—β. foliis lanceolato-subulatis erectis adpresse sericeis.—γ. foliis linearibus brevibus mucrone recurvo villosis. Œ. uniflora, Gill. *mst.*—α. Between Talca and Curico in Chili, *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 606.)—β. Conception, *Cuming* (*N.* 821.)—γ. Between Talca and Curico, *Dr. Gillies.* Near the road to Santiago, *Bridges.*

419. (1.) Gayophytum *micranthum,* (Hook. et Arn.).—G. humile, Adr. de Juss. in *An. Sc. Nat. v.* 25. *p.* 18. *t.* 4. (ad specimen perpusillum).—Œnothera micrantha, *Presl, Reliq. Hœnk. v.* 2. *p.* 31.—Œ. rigida, Gill. *mst.* La Punta de las Vacas, Andes of Mendoza ; and El Cerro del Morro, province of San Luis, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 321.) Los Ojos de Agua, *Bridges,* 1832, (*N.* 331.)—The specimens figured

by Adr. de Jussieu are only about two or three inches long, and nearly simple; those from Cuming and Bridges are about five inches high with long horizontal branches; while others from Dr. Gillies are nearly a foot high, and the branches numerous, erect, and rigid.

420. (1.) Jussieua *repens*, Linn.—R. et P. *Fl. Per. v.* 4. *ined. t.* 382.—J. Swartziana, De Cand.—J. Montevidensis, Spr.?—J. Patibilcensis, H. B. K.?—J. oblonga, J. Mendocinensis, et J. pumila, Gill. *mst.*—Pampas of Buenos Ayres, *Tweedie.* Moist places in the Pampas of Buenos Ayres, Lagunillo near Mendoza, and Curico in Chili, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 323.) Valparaiso, *Bridges.*—This seems a most variable plant, both as to pubescence and the length of the peduncle, and it is on this account we have united so many synonyms:—our Chilian specimens are usually pubescent.

421. (2.) Jussieua *stenophylla*, (Gill. *mst.*); caule suffruticoso (?) flexuoso superne hirsuto-villoso, foliis anguste lanceolatis utrinque acuminatis piloso-pubescentibus fructum fere duplo excedentibus, fructu sub-cylindraceo pedunculis apice bibracteolatis longiore bracteolis parvis lacinias calycinas quinque lanceolatas æquante.—Moist places at Mendoza, *Dr. Gillies.*—The specimens before us have a firm stem, and appear to have belonged to a shrubby plant, in which case this species will rank close to *J. Peruviana.*

422. (3.) Jussieua *hexapetala*, (Hook. et Arn.); glabra, caule fruticoso (?) flexuoso, foliis obovato-oblongis in petiolum longiusculum attenuatis fructum paullo longioribus, bracteolis sub fructu minutis glandulæformibus, laciniis calycinis 6 lanceolatis petalis duplo brevioribus.—Uraguay, *Tweedie.*

423. (4.) Jussieua *longifolia*, De Cand.—Marshes near Buenos Ayres, *Tweedie.*

424. (5.) Jussieua *multinervia*, (Hook. et Arn.); caule stricto hirto piloso, foliis oblongis basi in petiolum attenuatis supra glabris, nervis divergentibus approximatis supra

impressis subtus prominulis hirto-pilosis, pedicellis unifloris pilosis folium æquantibus apice bibracteolatis fructu subturbinato 4-angulo longioribus, laciniis calycinis 4 oblongis acuminatis petalis subbrevioribus.—Marshes at Buenos Ayres, *Tweedie.*—We scarcely know any species with which to compare this in character; it approaches to *J. nervosa,* but it is in reality very distinct from what we possess under that name;—it is also allied to *J. elegans,* S. Hil.

425. (6.) Jussieua *bracteata,* (Hook. et Arn.); caule herbaceo glabriusculo, foliis late lanceolatis basi in petiolum longum attenuatis glabris fructum duplo excedentibus, nervis plurimis approximatis, fructu brevi—turbinato basi bracteis duabus ovato-lanceolatis calycem æquantibus suffulto, lobis calycinis 4 fructu plus duplo longioribus duobus cæteris multo latioribus.—Uraguay, *Tweedie.*

426. (1.) Cercodia *erecta,* Murr.—Haloragis Cercodia, Ait.—Juan Fernandez, *Mr. Douglas; Dr. Scouler; Bertero; Cuming* (*N.* 1347.)

427. (1.) Myriophyllum *proserpinacoides,* (Gill. *mst.*); floribus axillaribus sub-dioicis, masculis octandris, foliis omnibus subconformibus pectinato-pinnatipartitis, lobis linearibus acutis.—Ditches at Buenos Ayres, *Dr. Gillies; Tweedie.* Andes of Chili (first and second ranges), *Cuming* (*N.* 164.)—All the specimens we have seen have the same appearance, and never present the capillary segments of the lower leaves, found in the allied *M. verticillatum.* Although we consider this a distinct species, yet its character is far from satisfactory, and De Candolle's *M. verticillatum,* var. *limosum,* seems almost to connect the two. In none of the specimens from Dr. Gillies have we observed a male flower; those from Cuming, again, are entirely male; but in one from Tweedie, principally male, we have seen also female flowers below: in *M. verticillatum* the flowers are constantly monœcious.

428. (2.) Myriophyllum *ternatum*, Gaud.—β. *tetraphyllum;* foliis floralibus quaternis.—M. viridescens, Gill. *mst.*—Running water in El Valle de Uspallata, Andes of Mendoza, *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 638.); *Bridges*, 1832, (*N.* 546.)—The floral leaves in all Dr. Gillies' specimens are of a fine bluish-green. This is seemingly intermediate between the true *M. ternatum* and *M. elatinoides*, Gaud., with which last it agrees in the number of floral leaves, but differs by the monœcious flowers.

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429. (1.) Lythrum *hyssopifolium*, Linn.—Marshy places at Lagunilla, near Mendoza, *Dr. Gillies.* Moist woods of the Parana, *Tweedie.* Aconcugua in Chili, *Cuming* (*N.* 210.) Quillota, *Bridges*, 1832, (*N.* 279.) Conception, *Cuming* (*N.* 125.) Juan Fernandez, *Bertero; Douglas.*—The plant found by D'Urville at Conception, referred by De Candolle to *L. thymifolium*, belongs, undoubtedly, to the present species.

430. (1.) Cuphea *ligustrina*, Cham. et Schlecht. *in Linnæa, v.* 2. *p.* 359.—β. dente calycino dorsali cæteris tantum paullo majore.—C. Bonariensis, Gill. *mst.*—Moist places near Buenos Ayres, *Dr. Gillies; Tweedie.*—Our plant corresponds exactly with the description above referred to, except in the size of the dorsal calycine segments, in which respect it agrees with *C. spicata;* but that species is herbaceous, and has broader leaves.

431. (2.) Cuphea *spicata*, Cav.—Uraguay, *Tweedie.*

432. (3.) Cuphea *glabra*, (Gill. *mst.*); floribus endecandris oppositis pedunculatis ecalcaratis, dentibus calycinis æqualibus, stylo et germine supra villosis, ovulis 30-40, racemo brevi 4-6-floro, ramis extrafoliaceis, foliis anguste lanceolatis utrinque acuminatis vix petiolatis glabris, caule fruticoso.—Wet shores of Rio de la Plata, *Dr. Gillies.* Buenos Ayres, *Tweedie.*—Allied to *C. ligustrina*, but the calycine teeth seem quite

equal, and the leaves are much smaller and more crowded: the flowers are also rather smaller.

433. (4.) Cuphea *glutinosa*, Cham. et Schl. *in Linn. v.* 2. *p.* 369.—C. hirsuta, Gill. *mst.*—At Melincuecito on the Pampas of Buenos Ayres, *Dr. Gillies.*—The branches are covered with short rigid hairs, but many of them bear glands at their apex, and there being no other distinguishing character, we have united ours to the Brasilian plant.

434. (1.) Heimia *salicifolia*, Link,—Lythrum flavum, *Spr.*—Near La Punta del Sauce and El Rio Quarto, Province of Cordova, *Dr. Gillies.* Pasture-fields at Buenos Ayres, *Tweedie.*

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435. (1.) Pleurophora *pungens*, (Don *in Edinb. New Phil. Journ. N.* 23;) caule fruticoso ramosissimo folioso, foliis lineari-lanceolatis, floribus confertis subspicatis, filamentis 5–8 calyce longioribus.—Cordillera of Chili, *Cuming* (*N.* 244.); *Bridges,* 1832, (*N.* 542.)

436. (2.) Pleurophora *polyandra,* (Hook. et Arn.); radice annua, caulibus prostratis furcatis folia perpauca caduca gerentibus, floribus confertis subspicatis, filamentis plurimis calyce brevioribus, foliis floralibus ovato-oblongis.—Cordillera of Chili, *Cuming* (*N.* 216.); *Bridges,* 1832, (*N.* 541.)—We have not seen cauline leaves: the floral leaves and calyces have a reddish tinge. The petals are white. There are from 20 to 30 filaments, or even more, but we have not observed that they are all antheriferous, although this is highly probable, from the number of loose anthers lying in the cavity of the calyx. In this and the other species, the spinose teeth of the calyx are glabrous, while the mucronate teeth are of a dark colour, and singularly cristate, like the setæ to the anthers of some *Heaths.*

437. (3.) Pleurophora *pusilla,* (Hook. et Arn.); radice annua, caulibus brevibus simplicibus vel parce ramosis, foliis oblongo-ellipticis basi attenuatis, floribus paucis

subcapitatis, filamentis sub-senis calyce brevioribus.—Valparaiso, *Cuming* (*N.* 767.)—This little plant is of a cinereous or pale greenish hue. The petals are white.

438. (1.) Rhexia? *heterophylla*, (Hook. et Arn.); herbacea, annua (?), ramis 4-angularibus junioribus hispidis, foliis caulinis breve petiolatis lanceolatis acuminatis 3-nerviis serratis serraturis nervisque subtus setoso-hispidis, remealibus parvis ovatis acutis sessilibus, ramulis 1-floris, calycis tubo ovato setoso laciniis 4 lanceolatis ciliatis persistentibus, petalis obovatis lacinias calycinas plus duplo excedentibus apice ciliatis.—Banda Oriental, *Baird.*—The tube of the calyx is scarcely narrowed into a neck, as in a true *Rhexia;* the stamens are unequal; anthers 1-pored, without any auricles or spur at their base. Capsule 3-celled, free, not above the length of the calyx, and without either scales or bristles at the apex. Seeds cochleate and tuberculate.—From this analysis it will appear that our plant belongs to De Candolle's tribe of *Rhexieæ,* but differs from all the known genera. The species is remarkable for the small and differently shaped leaves of the branches, as compared with those of the stem.

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439. (1.) Myrtus *stipularis,* (Hook. et Arn.); ramis acute tetragonis, pedunculis axillaribus solitariis folio brevioribus apice flores 3 breviter pedicellatos 5-fidos gerentibus, staminibus plurimis longis, foliis ovatis pellucido-punctatis margine pellucidis, ramis tetragonis ad angulos petiolo utrinque squamis stipulæformibus inflatis parvis instructis.—Chiloe, *Cuming,* (*N.* 32, 33.)—The leaves are broader in Cuming's *N.* 33 than in the other, and the whole plant more dense; but there is no other difference.

440. (2.) Myrtus? *Fernandeziana,* (Hook. et Arn.); foliis ovatis vel oblongis obtuse acuminatis glabris submembranaceis sparse punctulatis junioribus conspicue pel-

lucido-punctatis reticulato-venosis glabris, ramulis pubescentibus, fructu pyriformi subrotundo scabro, segmentis calycinis 4.—M. Luma, Bertero *in Ann. Sc. v.* 21. *p.* 347.—Juan Fernandez, *Dr. Scouler; Mr. Douglas.*—Our specimens are without flower, so that we must leave a more complete analysis to the French Botanists who are describing Bertero's acquisitions. It cannot be the M. Luma of Sprengel, nor of Molina.

441. (1.) Psidium? *amygdalinum,* (Hook. et Arn.); foliis junioribus oppositis lanceolatis breviter petiolatis cano-pubescentibus, pedunculis brevibus axillaribus fasciculatis unifloris calycibusque cano-tomentosis, ramis glabris.—Corientes, *Baird.*—The old leaves appear to be deciduous, at least there are none on our specimens, and the flowers have therefore the appearance of coming out before the foliage; so that, had it not been for the inferior germen, we should have referred this plant to the tribe *Amygdaleæ* among the *Rosaceæ.*

### TETRASTEMON. (*Hook. et Arn.*)

*Calycis* tubus oblongo-cylindraceus basi attenuatus germini adherens: limbus 4-partitus. *Petala* 4, inter lobos calycinos inserta, obovato-subrotunda, patentia, intus glandulosa: æstivatio imbricata. *Stamina* 4, fauci calycis inserta, petalis alterna, erecta: *filamenta* longissima, filiformia, crassiuscula: *antheræ* erectæ, oblongæ. *Germen* biloculare, loculis pluriovulatis; placentis medio dissepimenti affixis, bilamellatis; lamellis divaricatis, dissepimento parallelis, ad marginem intus ovuliferis. *Stylus* longitudine staminum, filiformis. *Stigma* simplex. —Arbor? Rami *teretes, apice foliosi.* Folia *opposita, integerrima, oblongo-lanceolata, apiculata, basi in petiolum perbrevem attenuata, obsolete punctata, coriacea, glaberrima, costata, obscure parallelim et oblique nervosa, nervis ante marginem in nervulum margini parallelum unitis.* Cymi, *in ramos vetustiores foliis delapsis denudatos, later-*

*ales, sessiles, divaricato-dichotomi, ad dichotomias bibracteati, bracteis ovatis acutis basi coadunatis.*

**442.** (1.) T. *loranthoides*, (Hook. et Arn.)—Santa Cruz in the Missions of Brazil, *Baird.*—This genus, on account of the length of the germen, and its being 2-celled, is most allied to *Caryophyllus;* but it differs from that and all other *Myrtaceæ* hitherto described, by the stamens being equal in number to the petals. The rigid straight long stamens seem to ally it slightly to *Beaufortia* and some others of the *Leptospermeæ*, with which, however, it appears to have nothing else in common.

**443.** (1.) Eugenia *Ugni*, (Hook. et Arn.); pedunculis axillaribus solitariis 1-floris folio brevioribus, bracteolis sub calyce persistentibus lobisque calycinis lineari-lanceolatis obtusis subfoliaceis reflexis, foliis ovatis acutis coriaceis impunctatis utrinque glaberrimis supra viridibus nitidis subtus albidis, ramulis novellis petiolisque superioribus pubescentibus.—Myrtus Ugni, Mol.—Mortilla, Feuill. *Chil. v.* 3. *t.* 31.—Chiloe, *Cuming* (*N.* 27.)—Some of the leaves are almost round, others broadly obovate and shortly acuminate; but these deviations from the ovate figure appear to be caused by extraneous circumstances. This species is only distinguishable by the presence of bracteolæ from a plant we possess from St. Vincents, and which appears to be *E. cerasina*, Vahl., referred by De Candolle to *E. ligustrina*, Willd. This and all the species we here place in *Eugenia*, have the flowers quadrifid, and the leaves shortly petiolate.

**444.** (2.) Eugenia *Selkirkii*, (Hook. et Arn.); pedunculis axillaribus solitariis recurvo-patentibus 1-floris folio brevioribus, bracteolis sub calyce lineari-oblongis calycis tubo longioribus, lobis calycinis oblongis obtusis reflexis, foliis obovatis obtusis coriaceis utrinque punctulatis glabris subtus albicantibus, ramulis novellis pedicellisque pubescentibus.—Myrtus Ugni, Bert. *mst.*—Juan Fernandez, among copsewood, on the summit of the highest mountains, *Bertero.*—Seemingly intermediate between the last species and *E. correæfolia.*

445. (3.) Eugenia *ferruginea,* (Hook. et Arn.); pedunculis axillaribus solitariis recurvis 1-floris folio paullo brevioribus, bracteolis sub calyce ovatis parvis, lobis calycinis rotundatis, foliis ellipticis basi apiceque obtusis coriaceis enervibus punctulatis supra convexis glabris viridibus junioribus subtus ramulis novellis petiolisque ferrugineo-sericeis.—Valparaiso, *Bridges,* 1832, (*N.* 323.) ; *Cuming* (*N.* 719.)—This alone, of all the Chilian *Myrtaceæ* we possess, has the middle nerve of the leaf so sunk in the substance, as to be imperceptible. It ranks next to *E. leptospermoides,* DC., and is only to be separated from it by the rusty colour of the underside of the leaves, which it is scarcely possible that author could have passed over in silence. It is extremely probable that Feuillée's "Myrtus, vulgo *Hitigu,*" *v.* 3. *f.* 31, belongs to this species.

446. (4.) Eugenia *correæfolia,* (Hook. et Arn.); pedunculis axillaribus solitariis unifloris validis folium subæquantibus, bracteolis sub calyce tubum æquantibus lineari-oblongis, lobis calycinis rotundatis concavis, foliis obovato-ellipticis obtusis basi acutis coriaceis subtus punctulatis pallidioribus (junioribus) minute pubescentibus, ramulis rufo-sericeis.—Valparaiso, *Mr. Cruckshanks.* Chili, *Cuming* (*N.* 95.)—The flowers of this species are about the size of those of *Myrtus tomentosa.* In the leaves it resembles *Correa alba.*

447. (5.) Eugenia *Cumingii,* (Hook. et Arn.); pedunculis axillaribus solitariis unifloris folio paullo brevioribus, bracteolis sub calyce minutis lanceolatis, lobis calycinis concavis rotundatis petalisque non ciliatis, foliis late ovatis obtuse acuminatis coriaceis punctulatis glabris supra viridibus subtus albidis, ramis petiolis nervisque subtus rufo-villosis.—Chiloe, *Cuming* (*N.* 31.)—This seems most allied to *E. obtusa,* DC.

448. (6.) Eugenia *ovata,* (Hook. et Arn.); pedunculis soli-

tariis axillaribus unifloris folium subæquantibus, bracteis sub flore minutis ovatis acutis subpersistentibus, lobis calycinis concavis rotundis petalisque non ciliatis, foliis ovatis acutis coriaceis opacis glabris supra viridibus subtus pallidis punctulatis, ramulis petiolisque rufo-pubescentibus.—Chiloe, *Cuming* (*N.* 30.)

449. (7.) Eugenia *Chekan,* (Hook. et Arn. *in Bot. Beech. Voy. v.* 1. *p.* 56.); pedunculis sub-solitariis axillaribus sub-unifloris folio longioribus, bracteis sub flore minutis linearibus deciduis, lobis calycinis concavis rotundatis petalisque ciliatis, foliis ovalibus basi apice acutis pellucido-punctatis coriaceo-membranaceis glabris concoloribus, ramulis pubescentibus.—*α*. pedunculis unifloris. —*β*. pedunculis nonnullis bifidis 3-floris. Nom. vern. *Palo Colorado* and *Temu.* (*Bridges*).—*α*. Valparaiso, *Mr. Cruckshanks ; Bridges,* 1832, (*N.* 322.) ; *Messrs. Lay* and *Collie.* La Hacienda de Ovalle, and El Valle del Rio Claro, Chili, *Dr. Gillies.* Chili, *Cuming* (*N.* 93.)—*β*. La Cuesta de Zapata, Chili, *Dr. Gillies.*—We have remodelled the specific character formerly given, in order to distinguish this species more readily from some others we are only lately made acquainted with. This and the three following bear a great similarity to one another, and we might have made them all varieties, had we not found points of difference recognized as sufficient in other species. The present, by the falling off of the upper leaves, sometimes presents the appearance figured by Feuillée, *v.* 3. *t.* 32, and therefore we have no doubt but it is *E. Chekan, Molina,* &c.

450. (8.) Eugenia *Gilliesii,* (Hook. et Arn.); pedunculis solitariis axillaribus bifidis trifloris, flore medio sessili lateralibus pedicellatis, bracteolis subcalyce minutis valde caducis, lobis calycinis concavis rotundatis petalisque margine non ciliatis, foliis glabris coriaceo-membranaceis ovalibus basi apice acutis punctulatis utrinque subconcoloribus, ramis ramulisque glaberrimis.—El Valle del Rio Teno, Chili, *Dr. Gillies.*—A few of the peduncles are only 1-flowered.

451. (9.) Eugenia *apiculata*, (*DeCand. Prod. v.* 3. *p.* 276. ?); pedunculis axillaribus subbinis uno simplici unifloro altero apice 3–5-floro, flore medio sessili lateralibus pedicellatis, bracteolis sub calyce minutis valde caducis, lobis calycinis rotundatis petalisque ciliatis, foliis late ovatis mucronatis basi acutis vix punctulatis glabris subtus pallidioribus, ramulis petiolis nervoque subtus rufo-pubescentibus.—Chiloe, *Lieut. Edward Bayley*, R. N.—This character differs so slightly from that given by De Candolle, that we can scarcely doubt of the identity of the species.—In Cuming's *N.* 29, the single-flowered adventitious peduncle is rarely present.

452. (10.) Eugenia *affinis*, (Gill. *mst.*); pedunculis solitariis bis terve bifidis cum pedicellis folium plus duplo superantibus, bracteolis sub calyce minutis valde caducis, lobis calycinis concavis rotundatis petalisque ciliatis, foliis glabris coriaceo-membranaceis sparse punctulatis utrinque subconcoloribus obovatis mucronatis basi acutis, ramulis rufo-pubescentibus.—El Valle del Rio Teno, and del Rio Claro, Chili, *Dr. Gillies*.

453. (11.) Eugenia *Cruckshanksii*, (Hook. et Arn.); pedunculis axillaribus solitariis folium æquantibus bifidis vel bis bifidis, bracteolis sub flore linearibus caducis, laciniis calycinis ovatis persistentibus, foliis subcoriaceis punctulatis glabris oblongo-ellipticis obtusis basi attenuatis supra viridibus subnitidis subtus pallidis, ramulis glabris novellis pubescentibus.—Myrtus Luma, *Spreng.*, not of *Molina.*—Valparaiso, *Mr. Cruckshanks.* Valle del Rio Claro, Chili, *Dr. Gillies.* Chili, *Cuming* (*N.* 94.)—The fruit is globular, aud contains a few seeds that are reniform, with a grey shining crustaceous testa, nearly as in *Myrtus;* but the cotyledons are thick and conferruminate, exactly like those of *Eugenia.*

454. (12.) Eugenia *Temu*, Hook. et Arn. *in Bot. Beech. Voy. v.* 1. *p.* 56.—Nom. vernac. *Pitri.*—Valparaiso, *Messrs. Lay* and *Collie; Mr. Cruckshanks*; *Matthews.*—Near Rio Lontice, and Valle del Rio Teno, Chili, *Dr.*

*Gillies.* Chili, *Cuming* (*N.* 100.)—Closely allied to the last species, but the flowers are corymbose, or rather umbellate at the extremity of the peduncle: of these the one in the centre is sessile, and two or three on each side pedicellate.

455. (13.) Eugenia *stenophylla*, (Hook. et Arn.) ; pedunculis subsolitariis omnibus axillaribus folium subæquantibus bifidis 3-floris, flore medio sessili lateralibus longe pedicellatis, bracteolis sub calyce lineari-lanceolatis tubo brevioribus, laciniis calycinis rotundatis, foliis alternis oppositis et ternis oblongo-lanceolatis acutis basi attenuatis coriaceis sparse punctulatis supra viridibus subtus albidis utrinque glabris.—*α.* foliis angustioribus, ramulis glabriusculis vel glaberrimis.—*β.* foliis duplo latioribus, ramulis hirsuto-pubescentibus.—*α.* Wet places near Valparaiso, *Mr. Cruckshanks ; Bridges*, 1832, (*N.* 319.) Vina de la Mar, near Valparaiso, and near Talca, *Dr. Gillies.* Chili, *Mr. Menzies ; Cuming* (*N.* 98.)—*β.* Chili, *Cuming* (*N.* 97.)

456. (14.) Eugenia *multiflora*, (Hook. et Arn.); pedunculis 2–3 axillaribus terminalibusque folio longioribus apice umbelliferis, radiis subquinis lateralibus 1-floris mediis elongatis bifidis 3-floris centrali brevissimo, lobis calycinis subrotundis ciliatis demum reflexis, petalis rotundatis integerrimis calyce triplo longioribus, foliis ellipticis basi apice subacuminatis utrinque punctulatis glabris subtus pallidis, ramis glabris, ramulis rufo-pubescentibus.—Quillota, *Bridges*, 1832, (*N.* 320.)—*β.* foliis angustioribus longioribusque, pedunculis gracilioribus.—Chili, *Cuming* (*N.* 96.)—Mr. Bridges informs us that this is called *Petri*, and grows to the height of twenty or thirty feet.

457. (15.) Eugenia *Bridgesii*, (Hook. et Arn.); pedunculis bifidis vel bis bifidis folio brevioribus axillaribus solitariis et terminalibus cymosis, bracteolis sub flore subulatis parvis, lobis calycinis rotundatis, foliis obovato-oblongis apiculatis basi subattenuatis coriaceis punctulatis supra viridibus subtus albidis utrinque glabris,

ramulis pubescentibus.—Chili, *Cuming* (*N.* 99.)—Allied to *E. stenophylla*, but the leaves are broader, and the flowers are not axillary only, but also in terminal cymes.

458. (16.) Eugenia *planipes*, (Hook. et Arn.); pedunculis compressis multifloris racemoso-cymosis axillaribus vel sæpius terminalibus, racemis inferne foliosis, pedicellis complanatis binis altero supraposito, bracteolis lanceolatis parvis appressis, lobis calycinis rotundatis, foliis oblongis basi apice attenuatis coriaceis sparse punctulatis subtus pallidis utrinque glabris, caule tereti, ramulis compressis pubescentibus.—Chiloe, *Cuming* (*N.* 28.)—Even the axillary racemes are almost always provided with a pair or two of leaves, so they may be considered terminal on short branches; in all, the lower or two lower series of pedicels arise from the axils of leaves. From each point there are two flat pedicels, one springing from the axil of the other. The leaves are sometimes, but rarely, alternate: may not this, therefore, be *Myrtus maxima*, Mol.?

459. (17.) Eugenia *Tweediei*, (Hook. et Arn.); pedunculis axillaribus bifidis flore in dichotomia sessili folio plus duplo brevioribus, bracteis sub calyce minutis squamiformibus, foliis lanceolatis basi apice acuminatis utrinque glabris punctulatis nervis parallelis numerosis, lobis calycinis rotundatis.—Islands of the Corregolos, Uraguay, *Tweedie.*

460. (18.) Eugenia *elliptica*, (Hook. et Arn.); pedunculis axillaribus solitariis bifidis vel bis bifidis, flore in dichotomiis sessili, bracteolis sub calyce glaberrimo subulatis deciduis tubum æquantibus, lobis calycinis rotundatis concavis deciduis tubum æquantibus petalisque ciliatis, foliis ellipticis vix acutis coriaceis creberrime punctatis utrinque concoloribus glabris, ramulis teretiusculis.—Islands of the Corregolos, Uraguay, *Tweedie.*—This and the preceding individual belong to a section in which not above three or four were previously known from Brazil.

461. (1.) Bryonia *tenuifolia*, (Gill. *mst.*); foliis 3-partitis

segmentis bi-pinnatipartitis laciniis linearibus paucis inferioribus unilateralibus superioribus oppositis, pedunculis fœmineis solitariis simplicibus petiolum æquantibus, fructu ovali lævi subdispermo.—Pampas in Province of Cordova, *Dr. Gillies.* Sandy plain near Santa Fée, and Buenos Ayres, *Tweedie.*—Nom. vernac. *Aji del Torvo.*

462. (1.) Sicyos *Baderoa,* (Hook. et Arn.); foliis cordatis angulatis minute denticulatis utrinque subglabris, angulis acuminatis, lobis inferioribus sibi mutuo incumbentibus, cirrhis 3-fidis, floribus utriusque sexus capitatis paucis, pedunculis fœmineis masculo dimidio brevioribus, fructibus junioribus ovatis.—Baderoa bryoniæfolia, *Bertero.*—Valparaiso, *Cuming* (*N.* 698.); *Mathews* (*N.* 302.); *Bridges,* 1832, (*N.* 61.)

463. (1.) Momordica *Hystrix,* (Gill. *mst.*); foliis 5-lobatis glabris lævibus basi subcuneatis, lobis mucronatis denticulatis inferioribus 2 recurvato-patentibus medio productiore, cirrhis simplicibus, floribus ex eadem axilla masculis racemosis fœmineo solitario pedunculato, fructu oblique ovato setis validis echinato.—Buenos Ayres, *Dr. Gillies; Tweedie.*

464. (1.) Cucurbita *asperata,* (Gill. *mst.*); dioica, caulibus glabris, foliis palmato-5-partitis utrinque punctis callosis subtus crebrioribus asperatis, segmentis sinuato-pinnatifidis, cirrhis simplicibus, floribus masculis capitato-racemosis breviter pedunculatis, fœmineis pedunculatis solitariis, fructu subgloboso oligospermo.—Uncultivated places in the Province of Mendoza, *Dr. Gillies.* Nom. vernac. *Sandillo del Campo.*—This agrees in many points with *C. mammeata,* Mol., but that species is from Chili, and is very imperfectly described. Dr. Gillies finds two varieties; that growing in *travesia,* or more arid places, has the segments of the leaves less deeply sinuated than the other.

465. (1.) Carica *pyriformis*, (Willd.); caule humili ramoso, foliis cordato-trilobis lobis angulatis, angulis acutis, fructu solitario pedunculato pendulo parvo pyriformi.—*Feuill. Chil. v.* 2. *t.* 39.—Rocky cliffs along the shore at Valparaiso, *Bridges*, 1832, (*N.* 114.); *Cuming* (*N.* 759.)—This is undoubtedly the species described by Feuillée, although the fruit and whole plant in our wild specimens be much smaller than what he observed in a garden in Lima. The stems are from 3 to 6 feet high, according to Mr. Bridges, and branched, which makes us very doubtful of its being a true *Carica.* The flowers are purple. Linnæus referred Feuillée's plant to his *C. Posoposa*, a Surinam plant: this reference is continued in Rees' Cyclopædia; but not only does he combine several heterogeneous synonyms, but in his herbarium are found only the leaves of *Aleurites triloba.*

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466. (1.) Passiflora (Decaloba, DC.) *retusa*, (Hook. et Arn.); foliis glabriusculis subtus biglandulosis basi cuneatis vel rotundatis trinerviis trilobis, lobis mucronulatis medio truncato lateralibus divaricatis productis, petiolis eglandulosis, pedunculo solitario petiolum superante.—Banks of the Uraguay, *Tweedie.* Santa Borga, Missions of Brazil, *Baird.*—Closely allied to *P. Vespertilio.*

467. (1.) Tacsonia *pinnatistipula*, Juss.—Passiflora pinnatistipula, *Cav. ic. v.* 5. *t.* 428.—P. tomentosa, *Cav. ic. v.* 6. *p.* 3. (non Cav. *diss.*)—P. tiliæfolia, Mol. *Chil.* (ed. Angl.) *v.* 1. *p.* 127.—P. Chilensis, *Miers.*—Quintero in Chili, *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 565.)

468. (1.) Malesherbia *linearifolia*, Poir.—*α.* floribus pallidis, foliis vix glandulosis. M. paniculata, *Don.*—Gynopleura linearifolia, *Cav.; Presl, in Reliq. Hænck. v.* 2. *p.* 46. (charact. opt.)—La Cuesta del Prado, and La Cuesta del Zapata, Andes of Chili, *Dr. Gillies.* Rio Colorado, *Mr. Cruckshanks.* Quillota, *Bridges*, 1832,

(*N.* 521.) Cordillera of Chili, *Cuming* (*N.* 292.)—*β.* floribus cæruleis, foliis vix glandulosis.—Gynopleura cærulea, *Presl, l. c.*—Valleys in the Andes of Chili, *Dr. Gillies; Cuming* (*N.* 293.) Quillota, *Bridges,* 1832, (*cum N.* 521.)—*γ.* floribus pallidis, foliis linearibus glandulis pedicellatis copiose ornatis.—M. coronata, Don *in Edin. New Phil. Journ. N.* 23. *p.* 112.—Valparaiso, *Cuming* (*N.* 373.)—*δ.* floribus pallidis, foliis oblongis glandulis pedicellatis sæpissime ornatis.—M. paniculata, *Don.*—Valparaiso, *Macrae.*—A species so variable, that we have scarcely seen two specimens alike. Those from Dr. Gillies of the *var. α.* agree best with the figure of Cavanilles (*Ic. t.* 376.), in which, however, the details of the petals and germen are indifferently represented. The leaves are from 3- to 7-partite, the lateral lobes much smaller than the middle one, and in Cuming's *N.* 292 these lobes are extremely small, while the middle one is deeply sinuate, and attenuated at the base; all the varieties, however, have this lobe more or less sinuate. The var. *δ.* has certainly a very different habit, but unless in the greater breadth of the foliage, we can find no character to separate it. Of the var. *γ.* Mr. Don informs us, that it has lately flowered from Cuming's seeds, retaining all the habit of the wild specimens; this variety Mr. Don describes to have a "corona integerrima," which is not the case in our specimens: of it he also says that the styles are terminal; but he only examined the germen, and in that state the styles are terminal in all the species of the genus. Nor ought the contrary to be expected, for the situation of the placentæ shows that what are termed the valves of the capsule, are merely the segments of its apex, which, in the state of germen, is small, flat, or even depressed: when more mature, this apex becomes elevated, splitting into three teeth or segments, with the styles at their base and alternating with them; the styles are then in appearance lateral, although not so, philosophically speaking.

469. (2.) Malesherbia *humilis*, Don, *in Edin. New Phil. Journ. N.* 23. *p.* 111.—Cordillera of Chili, *Cuming* (*N.* 260.) La Hazienda de San Isedro, Quillota, *Bridges*, 1832, (*N.* 520.)—Mr. Cuming seems to have found the same species in the south of Peru, as it forms his *N.* 915; but Mr. Don suspects he may have collected it also in Chili, perhaps at Coquimbo, where it was previously gathered by Mr. Macrae.

470. (3.) Malesherbia *fasciculata*, Don, *l. c. p.* 206.—At Chacabuca, Andes of Chili, *Cuming* (*N.* 176.) Near Collina, *Bridges*, 1832, (*N.* 513.)—A most singular plant, belonging to the genus or subgenus *Gynopleura* of Presl; but with a habit totally different from any species hitherto known.

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471. (1.) Bartonia *albescens*, Gill. *mst.* ex Arn. *in Ed. Journ. Nat. and Geogr. Science, May*, 1831, *p.* 273.—B. sinuata, *Presl, Reliq. Hænk. v.* 2. *p.* 38.—Jarillal, between Mendoza and the mountains (3000 feet), *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 248.) La Hazienda de San Josse, Aconcugua, *Bridges*, 1832, (*N.* 518.)—We may observe that the *Bartonia albicaulis*, Douglas, *in Hook. Flor. Bor. Am. v.* 1. *p.* 222. is certainly *Acrolasia Bartonoides*, Presl, *in Reliq. Hænk. v.* 2. *p.* 39. *t.* 55; but we suspect some mistake about its Chilian station.

472. (1.) Blumenbachia *insignis*, Schrad.—B. parviflora, Gill. *mst.*—Buenos Ayres, *Dr. Gillies.*—In Dr. Gillies' specimens the flowers are considerably smaller, and the leaves rather more cut than in our garden specimens; but we can perceive no essential difference.

473. (1.) Caiophora *coronata*, Hook. et Arn.—C. absinthiifolia, *Presl, l. c. p.* 43.—Loasa coronata, Gill. *mst.* ex Arn. *l. c. p.* 274.—On both sides of the Cordillera of the Andes between Mendoza and Chili, (8500 to 11,000 feet), *Dr. Gillies.*—The furrows on the fruit are nearly

straight, or scarcely spiral at all, so that this species partakes in some particulars of the character of *Loasa.*

474. (1.) Loasa *triloba,* Juss.—Valparaiso, *Matthews* (*N.* 259.) ; *Bridges,* 1832, (*N.* 272.) ; *Cuming* (*N.* 673.)—The mature fruit is obconical, and long in proportion to its breadth.

475. (2.) Loasa *acerifolia,* Juss.—Conception, *Messrs. Lay* and *Collie ; Cuming* (*N.* 824.)—The upper leaves are petiolate as well as the lower.

476. (3.) Loasa *heterophylla,* (Hook. et Arn.) ; caule prostrato dichotomo, foliis oppositis omnibus plus minusve breve petiolatis, inferioribus parvis hastato-triangularibus grosse dentatis floralibus inferioribus subreniformi-orbiculatis 5-lobis lobis subæqualibus 1–2-dentatis, superioribus 5-lobis lobis 1–2-dentatis medio productiore, pedunculo foliis longiore in dichotomia, lobis calycinis oblongo-lanceolatis petala subæquantibus, fructibus conico-hemisphæricis, petalis dentes calycinos æquantibus.—Valparaiso ? *Cuming* (*N.* 669.) Los Ojos de Agua, *Cruckshanks ; Bridges,* 1832, (*N.* 270.)—The stem is merely pubescent ; but the branches, particularly in their upper part, and the turbinate tube of the calyx, are provided with long sharp patent hairs.

477. (4.) Loasa *sagittata,* (Hook. et Arn.); caule volubili pubescente, foliis omnibus petiolatis oppositis cordato-sagittatis acuminatis margine sublobatis lobis crenatis, pedunculis axillaribus et terminalibus paucifloris, lobis calycinis ovato-oblongis.—Chiloe, *Cuming* (*N.* 60.)—We have not observed any long stinging hairs on this species.

478. (5.) Loasa *nitida,* Lam.—β. foliis profundius lobatis, lobis angustioribus. *L. tricolor,* Lindl. *in Bot. Reg. t.* 667.—α. Valparaiso, *Bridges,* 1832, (*N.* 268.)—β. Valparaiso, *Cuming* (*N.* 663.)—We cannot think that the plant of the *Exotic Flora, t.* 83, or of the *Bot. Mag. t.* 2372, are at all different from that of Dombey, described by Lamarck, and figured by Jussieu, and we

rather suspect the Peruvian locality to be a mistake. Cuming's and Lindley's plant is, however, slightly different, but cannot form a distinct species. *L. bryoniæfolia*, Schrad. is apparently the same as the var. α.

479. (6.) Loasa *Placei*, Lindl. *in Hort. Soc. Lond. Trans. v.* 6. *p.* 95.—*L. acanthifolia*, Lindl. *Bot. Reg. t.* 785.—Valparaiso, *Bridges*, 1832, (*N.* 269.)—This species is much more nearly allied to *L. nitida*, than to the true *L. acanthifolia*.

480. (7.) Loasa *elongata*, (Hook. et Arn.); caule valde elongato simpliciusculo nitido, foliis remotis oppositis petiolatis basi cordatis 5-7-lobatis, pedunculis axillaribus folio duplo longioribus paucifloris, lobis calycinis late ovatis petalis (rubris ?) brevioribus, fructu hemisphærico.—Coquimbo, *Cuming* (*N.* 870.)—Our specimens are very imperfect, but cannot be referred to any described species.

481. (8.) Loasa *sclareæfoliæ*, Juss.—Valparaiso, *Cuming* (*N.* 672.)

482. (9.) Loasa *acanthifolia*, Lam.—Ortiga Chilensis, *Feuill. Chil. v.* 2. *t.* 43.—Conception, *Cuming* (*N.* 805.)—The upper leaves are often alternate, a character which is omitted in Jussieu's figure of this species, (*Ann. du Mus. v.* 5. *t.* 3. *f.* 2.)

483. (10.) Loasa *prostrata*, Gill. *mst.* ex Arn. *l. c. p.* 274.—La Cuesta de los Manantiales, Cerro de San Pedro Nolasco, in Chili, *Dr. Gillies.* Valparaiso ? *Cuming* (*N.* 668.) Cordillera of Chili, *Bridges*, 1832, (*N.* 275.)—β. *Cumingii*, foliorum segmentis bipinnatifido-sinuato-dentatis. Valparaiso, *Cuming* (*N.* 671.) Mountains near Aconcugua, *Bridges*, 1832, (*N.* 274.)—In the first variety the segments of the leaves are simply sinuato-dentate.

484. (11.) Loasa *floribunda*, (Hook. et Arn.); radice simplici fusiformi, caule brevi epidermide laxo infra inflorescentiam simplici supra paniculato-ramosissimo, foliis ovato-oblongis petiolatis caulinis oppositis sinuato-lobatis grosse dentatis basi cordatis, floralibus alternis inferioribus sinuato-lobatis superioribus minoribus basi

cuneatis dentatis vel integerrimis, pedicellis brevibus ex dichotomiis, lobis calycinis ellipticis acutis basi attenuatis petalis apiculatis brevioribus, squamis dorso supra medium triappendiculatis.—Valparaiso, *Cuming*, (*N.* 670.) Cordillera of Chili, *Bridges*, 1832, (*N.* 276.)

485. (12.) Loasa *dissecta*, (Hook. et Arn.); caule erectiusculo valido apice subramoso epidermide laxo niveo, petiolis oppositis inferioribus elongatis superioribus sensim minoribus, foliis tripinnatifidis segmentis ultimis ovatis obtusis, pedicellis brevibus ex dichotomiis, lobis calycinis anguste oblongis petalis plus duplo brevioribus.—Valparaiso, *Cuming*, (*N.* 667.) Los Ojos de Agua, and Aconcugua, *Bridges*, 1832, (*N.* 271.)—Our specimens are only in bud.

486. (13.) Loasa *lateritia*, Gill. *mst.* ex Arn. *l. c. p.* 275.—Descent from the Planchon and in El Valle de Fray Carlos, Chili, (9000 feet,) *Dr. Gillies.*—Here the appendages of the squamæ are inserted above the middle.

487. (14.) Loasa *pinnatifida*, Gill. *mst.* ex Arn. *l. c. p.* 275.—La Cuesta del Inga, Chili, (9000 feet,) *Dr. Gillies.*

488. (15.) Loasa *pallida*, Gill. *mst.* ex Arn. *l. c. p.* 274.—Near El Arroyo de San Nicolas, Chili, (5000 feet,) *Dr. Gillies.* Near Los Locos, Cordillera of Chili, *Bridges*, 1832, (*N.* 273.) Near Pruirera Quebrada, *Mr. Cruckshanks.* Valparaiso, *Cuming*, (*N.* 666.)—The appendages are seated on the squamæ, about the middle of the back. One species remains, *L. volubilis*, Juss., with which we are unacquainted, supposed to come from Chili, but of that we entertain considerable doubt.

489. (1.) Scyphanthus *elegans*, Don. *in Sweet, Brit. Fl. Gard. t.* 238.—Grammatocarpus volubilis, *Presl, Symb. Bot. v.* 1. *p.* 61. *t.* 38.—Chili, *Dr. Gillies.* Valparaiso. *Cuming* (*N.* 665.) Mountains near Aconcugua, *Bridges*, 1832, (*N.* 277.)

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490. (1.) Turnera *setosa*, Sm. *in Rees' Cycl. N.* 6.—T. pinnati-

fida, β. *Juss. De Cand.*—Pampas of Buenos Ayres, *Dr. Gillies.* Sandy banks near Buenos Ayres, *Tweedie.*

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491. (1.) Portulaca *grandiflora*, Hook.—*α. major;* foliis unciam vel sesquiunciam longis.—*Bot. Mag. t.* 2885.—*β. microphylla,* foliis vix semiunciam longis.—P. Mendocinensis, Gill. *mst.*—*α.* and *β.* Between Rio Saladillo and Mendoza, *Dr. Gillies.* Near Mendoza, *Tweedie.*—Although Dr. Gillies distinguished and drew up descriptions of these, from the living plants, as species, yet we cannot in the dry state find any specific difference: indeed a specimen from Tweedie is nearly as robust as in *α.*, while the leaves are larger than in *β.*

492. (2.) Portulaca *Gilliesii*, Hook. *in Bot. Mag. t.* 3064.—Plains near Mendoza, *Dr. Gillies.*—In our dried specimen, the leaves are about an inch long, and fall off so very readily from the upper part of the stem under the flowers, that these have the appearance, at first sight, of being seated at the apex of a longish naked peduncle.

### GRAHAMIA. Gill. *mst.*

" *Calyx* disepalus, persistens: *sepala* oblongo-lanceolata, mucronata, concava, rigida, bracteis 8–9 imbricatis, sepalis subsimilibus suffulta. *Petala* 5, obovata, obtusa cum mucronulo. *Stamina* plurima (circiter 40): *filamenta* filiformia, basi monadelpha: *antheræ* biloculares, erectæ. *Pistillum* 1: *germen* oblongum, 1-loculare: *Stylus* filiformis, sursum incrassatus: *stigmata* 4 vel (sæpius) 5, linearia. *Capsula* 1-locularis, 5-valvis. *Semina* plurima, compressa, late membranaceo-alata, placentæ centrali podospermio affixa.—Frutex *glaber, ramosus;* rami *divaricati.* Folia *alterna, teretia oblonga, obtusa, carnosa, axillis pilosa.* Flores *solitarii, ramos breves aut elongatos terminantes.* Bracteæ *scariosæ, uninervosæ, apiculatæ, interiores lanceolatæ, exteriores oblongæ brevioresque, circa calycem arcte imbricatæ.* Sepala *concava, albida, dorso longitudinaliter plurinervia, margine scari-*

*osa.* Petala *alba, facile marcescentia, unciam longa, calyce longiora. Staminum* filamenta *versus basin purpurea, sursum straminea:* antheræ *oblongæ, flavæ.* Stylus *semiunciam longus, filamentis longior:* germen *androphoro longitudine æquale:* stigmata *revoluta, pallide flava.*

493. (1.) G. *bracteata,* (Gill. *mst.*)—Xeranthus salicosus, Miers, *Chil. v.* 2. *p.* 529?—Frequent among bushes in the Travesia between San Luis and Mendoza, especially near the river Desaguadero (1500 feet), *Dr. Gillies.*—The corolla is white, rather large, but so very delicate in its texture that it shrivels up soon after being gathered: nor can it be dried so as to preserve its natural appearance. This may possibly be the plant alluded to by Mr. Miers, in his account of Chili, above-quoted; yet as there is no specimen or description from that gentleman, I prefer giving it a new name, partly because Mr. Miers' is too near *Xeranthemum,* and the floral coverings are not scariose; and partly because all the knowledge obtained of it by him has been from the written description and specimens collected by me. The former genus *Græmia,* or *Grahamia,* is the same as *Cephalophora, Cav.* (Gill. *mst.*)

494. (1.) Talinum *patens,* Willd.—Buenos Ayres, *Tweedie.*

495. (2.) Talinum *polygaloides,* Gill. *mst.* ex Arn. *in Ed. Journ. Nat. and Geogr. Sc. June,* 1831, *p.* 354.—Jarillal, and along the foot of the mountains near Mendoza, (300-4000 feet). *Dr. Gillies.*

496. (1.) Calandrinia *cistiflora,* Gill. *mst.* ex Arn. *l. c. p.* 355.—Andes of Mendoza and Chili, (9000 to 10,000 feet,) *Dr. Gillies.*

497. (2.) Calandrinia *Andicola,* (Gill. *mst.*); tota glabra, caule suffruticoso apicem versus folioso, foliis cuneato-oblongis acutis basi longe attenuatis, racemo terminali pauci (1-3-) floro, pedicellis elongatis, sepalis rotundatis vix apice mucronulatis margine integerrimis, petalis calycem paullo superantibus, floribus oligandris.—

Eastern side of the Cumbre, and at El Alto de la Laguna, *Dr. Gillies.*—Closely allied to *C. cistiflora,* but apparently quite distinct. From the following species it can only be distinguished by a minute examination, there being no character except in the margin of the sepals: they seem to have been found in the same localities.

498. (3.) Calandrinia *denticulata,* (Gill. *mst.*); tota glabra, caule suffruticoso folioso, foliis lanceolatis acutis basi attenuatis, racemo terminali pauci (1–3)-floro, pedicellis elongatis, sepalis rotundato-ovatis margine denticulato-serratis.—Eastern side of the Cumbre or ridge of the Cordillera, and at the El Alto de la Laguna on the western side, *Dr. Gillies.* Top of the Cordillera, *Cuming* (*N.* 1434.)—The lower part of the stem is much branched, without leaves, and has apparently grown, buried among stones.

499. (4.) Calandrinia *conferta,* Gill. *mst.* ex Arn. *l. c. p.* 356. —Andes of Mendoza, *Dr. Gillies.*

500. (5.) Calandrinia *trifida,* (Hook. et Arn.); radice annua, tenui, caulibus erectiusculis simplicibus subfoliosis pilosis, foliis linearibus acutis pilosis radicalibus elongatis caulinis superioribus longe ciliatis in axilla flores paucos foventibus, racemo corymboso denso terminali, bracteis longissime piloso-ciliatis inferioribus racemum superantibus, sepalis ovatis apice trifidis dorso parce margine creberrime longe pilosis, staminibus 5.—Valparaiso, *Bridges,* 1832 (*N.* 107.); *Mathews* (*N.* 189.); *Cuming* (*N.* 422.)—This, and the two following, seem closely allied to *C. umbellata,* DeCand., with which species, judging by the description given of it, we have no specimens that accord.

501. (6.) Calandrinia *Gilliesii,* (Hook et Arn.); radice perenni lignoso collo multiplici, caulibus erectiusculis simplicibus basi valde sursum sparse foliosis foliis oblongo-linearibus adpressim hirsute pilosis, racemo corymboso, bracteis inferioribus pedicellos vix æquantibus, sepalis ovatis apice sub-tridentatis dorso longe pilosis stamini-

bus 5.—C. umbellata, *Gill.*—Andes of Mendoza and Chili, *Dr. Gillies.* Cordillera of Chili, *Cuming*, (*N.* 218.) Los Ojos de Agua, *Bridges*, 1832, (*N.* 110.)

502. (7.) Calandrinia *sericea*, (Hook. et Arn.); radice perenni lignoso collo multiplici, caulibus erectiusculis ad basin præcipue foliosis, foliis linearibus acutis vel subulatis sericeo-pilosis, racemo paucifloro corymboso, pedicellis superioribus bracteas vix æquantibus, sepalis ovatis apice tridentatis dorso longissime sericeo-villosis, staminibus plurimis.—*α. longipes;* pedicello inferiore elongato gracili cæteris et bractea multo longiore.—*β. æquipes;* pedicellis omnibus subæqualibus.—*α.* Sierra Bella Vista, Aconcugua, *Bridges*, 1832, (*N.* 111.) Cordillera of Chili, *Cuming* (*N.* 281.)—*β.* near Collina and Questa, *Bridges*, 1832, (*N.* 109.) Cordillera of Chili, *Cuming* (*N.* 204.)—Of our second variety we have not seen the stamens: the flower is smaller than in *α.* In both, the leaves vary much in length, from 1 to 2, or even 3 inches.

503. (8.) Calandrinia *capitata*, (Hook. et Arn.); radice annua, caulibus erectiusculis glaberrimis (an semper?) subsimplicibus, foliis linearibus glabriusculis ciliatis, racemis capitato-congestis multifloris terminalibus et axillaribus pedunculatis, floribus subsessilibus, sepalis subrotundis apice tridentatis dorso longe pilosis.—Cordillera of Chili, *Cuming*, (*N.* 247.) Near Collina, *Bridges*, 1832, (*N.* 106.)

504. (9.) Calandrinia *ramosissima*, (Hook. et Arn.); radice annua, caulibus pluribus erectiusculis foliosis ramosis, ramis axillaribus horizontalibus, foliis linearibus pilosis basi longe ciliatis, racemis paucifloris brevibus, sepalis subrotundis truncatis apice obtuse tridentatis dorso longe pilosis.—Valparaiso, *Cuming*, (*N.* 730.)

505. (10.) Calandrinia *Cumingii*, (Hook. et Arn.); radice annua tenui, caulibus pluribus procumbentibus foliosis dichotome ramosis, foliis linearibus inferne attenuatis adpresse pilosis, racemis paucifloris terminalibus, sepalis subrotundis apice tridentatis dorso pilosis.—Valpa-

raiso, *Cuming*, (*N.* 511.); *Bridges*, 1832, (*N.* 427.); Cordillera of Chili, *Cuming* (*N.* 322.)—The upper part of the stems, racemes, and calyces, abounds in glandular viscid hairs. The whole plant has a purplish hue. In character this approaches too closely to the last species; yet their habit is so very different, that we can scarcely make them varieties.

506. (11.) Calandrinia *pilosiuscula*, De Cand.—C. compressa, Schrad.—Talinum ciliatum, Hook.—Tutuca, Feuill. *Chil. v.* 3. *t.* 41.—*β. tenella;* C. tenella, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 74.—*α.* Conception, *Messrs. Lay* and *Collie*. Vina de la Mar, near Valparaiso, *Bridges*, 1832, (*N.* 424.)—*β.* Valparaiso, *Messrs. Lay* and *Collie; Mathews*, (*N.* 241.); *Macrae; Bridges*, 1832, (*N.* 423); *Cuming*, (*N.* 710.)—Specimens, more perfect than what we formerly possessed, induce us now to refer our *C. tenella* to this species. The calyx in both varieties is sometimes nearly glabrous, but more often, particularly in the wild plant, furnished with broadish flat obtuse white hairs. The number of the stamens is variable.

507. (12.) Calandrinia *nitida*, (R. et P.?); caule adscendente glabro folioso, foliis oblongo-spathulatis acutiusculis basi attenuatis glabris, pedunculis axillaribus subrecurvis folio brevioribus, sepalis rotundis obtusis dorso ad nervos pilis planis obtusis instructis.—Valparaiso, *Cuming*, (*N.* 582.) Valparaiso and Quillota, *Bridges*, 1832, (*N.* 426.)—This approaches nearer to the short character given by Ruiz and Pavon than any other Chilian plant with which we are acquainted, unless indeed it be the last species, but these authors can hardly be supposed to overlook the triangular sepals.

508. (13.) Calandrinia *affinis*, Gill. *mst.* ex *Arn. l. c. p.* 355. —Andes of Chili, *Dr. Gillies.*

509. (14.) Calandrinia *diffusa*, Gill. *mst.* ex *Arn. l. c. p.* 355. —Andes of Chili, (10,000 feet,) *Dr. Gillies.*

510. (15.) Calandrinia *cæspitosa*, Gill. *mst.* ex *Arn. l. c. p.* 356.—Andes of Mendoza and Chili, (9000 to 11,000

feet,) *Dr. Gillies.*—This species differs slightly from the genus, by the more numerous valves to its capsule.

511. (16.) Calandrinia *glauca*, Schrad.—Valparaiso, *Mathews*, (*N.* 315.); *Cuming*, (*N.* 408.)—The stem seems very long; the lower leaves lanceolato-spathulate, acute, the upper ones lanceolate, acuminate; both are glaucous: the peduncles are distant, about an inch and a half long, and reflexed: bracteas ovate, acute, membranaceous, and spotted with purple. The seeds are pubescent.

512. (17.) Calandrinia *picta*, Gill. *mst.* ex Arn. *l. c. p.* 356.—Andes of Mendoza, (10,000 to 10,500 feet,) *Dr. Gillies.*—Seeds large and slightly pubescent.

513. (18.) Calandrinia *arenaria*, (Cham. *in herb nostr.*); glauca, caulibus plurimis prostratis glabris foliosis, foliis linearibus, pedunculo communi terminali nudo simplici vel ramoso, racemis corymbosis, pedicellis bracteas ovales membranaceas nervo medio atropurpureo subramoso pictas paullo superantibus, sepalis ovatis membranaceis venis simpliciusculis pictis, seminibus glabris.—*C. venulosa*, Hook. et Arn. *mst.*—Valparaiso, *Cuming* (*N.* 514.); *Bridges*, 1832, (*N.* 425.)—Closely allied to, but very distinct from the last species.

514. (1.) Montia *fontana*, Linn.—Valparaiso, *Cuming*, (*N.* 378.)

515. (1.) Colobanthus *aretioides*, (Gill. *mst.*); radice perenni crasso collo multiplici, calyce 5-partito laciniis ovatis, capsula 5-valvi.—At Los Hornillos, El Paramillo San Isedro, Andes of Mendoza, *Dr. Gillies.*—If Bartling (in *Presl, Reliq. Hænk. v.* 2. *p.* 13. *t.* 49. *f.* 2.) had not asserted so positively that the root of *C. Quitensis* was annnal, we might have been disposed to unite ours to that species. His *C. saginoides* is, we think, undoubtedly a variety of *C. Quitensis*, with a 4-partite calyx and 4-valved capsule.—We are at a loss to conceive why Kunth and Bartling both insert this genus among the *Carophylleæ*; the stamens are decidedly perigynous,

and alternate with the calycine segments, as Bartling describes, and this last is a peculiar character of the *Portulaceæ.*

516. (1.) Corrigiola *telephiifolia,* Pourr.—Valparaiso, *Cuming* (*N.* 370.)—Perhaps introduced with grain. In our Chilian specimens the branches of the inflorescence are much elongated, about 8 or 9 inches long.

517. (2.) Corrigiola *squamosa,* (Hook. et Arn.); caudice perenni subramoso apice valde squamoso multicauli, caulibus prostratis, foliis lineari-oblongis, racemis corymbosis aphyllis.—Valparaiso, *Mathews* (*N.* 250.); *Cuming* (*N.* 689.) Vina de la Mar, and Playa Ancha, near Valparaiso, *Bridges,* 1832, (*N.* 157 and 158.)—That portion of the root, or rather lower part of the stem, which we have above called a caudex, from its resemblance to that part in *Ferns,* we have seen in no other species of the genus: the scaly appearance at its summit is obviously caused by a congeries of stipules of a rusty brown colour.

518. (3.) Corrigiola *deltoidea,* Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 24.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Cuming* (*N.* 577.)

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519. (1.) Herniaria *setigera,* (Gill. *mst.*); perennis, herbacea, puberula, multicaulis, prostrata, foliis oblongo-lanceolatis apice spinuloso-setigeris, floribus subsessilibus axillaribus subsolitariis extus puberulis, staminibus 3, stylis basi concretis.—Paronychia australis, Gill. *mst.*—El Aguadita, near La Punta de San Luis, *Dr. Gillies.*—This species has no scales or abortive petals, and we can perceive but one style and stigma.

520. (1.) Paronychia *Chilensis,* DeCand.—Valparaiso, *Cuming* (*N.* 435.); *Bridges,* 1832, (*N.* 348.) Conception, *Cuming* (*N.* 819.)—The lobes of the calyx are decidedly, but shortly, aristate, on which account we had almost referred our plant to *P. Bonariensis,* but that

species has distant leaves and somewhat the habit of *Illecebrum verticillatum*, as far as we can judge from garden specimens, which, however, agree exactly with the description given in *Lam. Dict.* 5. *p.* 23. The Chilian plant has the leaves approximate, scarious stipules longer than the internodia, and is too closely allied to *P. polygonifolia*, from which we cannot point out any sufficient specific distinction. The two stigmas are linear, with scarcely any style.

521. (1.) Pentacæna *ramosissima*, (Hook. et Arn.)—P. polycnemonoides, Bartl. *in Reliq. Hænk. v.* 2. *p.* 5. *t.* 49. *f.* 1. —Læflingia ramosissima, Weinm.—Paronychia ramosissima, DeCand.—Meru Laguen, Feuill. *Chil. v.* 3. *t.* 28.—Las Achiras, province of Cordova, *Dr. Gillies.* Valparaiso, *Mathews* (*N.* 264.); *Cuming* (*N.* 476.); *Bridges*, 1832, (*N.* 347.) Buenos Ayres, *Tweedie.*

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522. (1.) Tillæa *minima*, Miers, *Chil. v.* 2. *p.* 530; caulibus diffusis ramosis, foliis minutis connatis ovali-oblongis, floribus 4-fidis ad axillas congesto-verticillatis breve pedicellatis, petalis acuminatis calyce brevioribus, carpellis 1–2-spermis.—*T. erecta*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 24. (charact. haud bona.)—Conception, *Messrs. Lay* and *Collie.* Coquimbo, *Cuming* (*N.* 903.)—Allied to *T. moschata* and *verticillata.*

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523. (1.) Tetilla *hydrocotylifolia*, DeCand. *Prod. v.* 4. *p.* 667. Ad. de Jussieu, *Ann. Sc. Nat. v.* 25. *p.* 7.—Dimorphopetalum Tetilla, Bertero, *Bullet. des Sc. Nat. v.* 20. *p.* 110.—Anarmosa gracilis, Miers *mst.*—Valparaiso, *Cuming* (*N.* 344.); *Bridges*, 1832, (*N.* 543.)—Nom. vernac. *Teta de Cabra*, and *Culantrillo* or *maiden-hair.*—Mr. Bridges adds, that it delights in the shade of rocks, and that "the footstalks of the leaves are eaten by the natives for diseases of the belly."—There are sterile filaments

between the stamens, which DeCandolle having overlooked, referred this genus to the *Saxifrageæ*, probably from its distant resemblance to *Sax. cernua;* but it really approaches very closely to *Francoa*, and belongs with it to the *Galacineæ* of Don, or *Francoaceæ* of Ad. de Juss., probably a tribe of *Crassulaceæ.* The generic name given by Bertero is undoubtedly the oldest, but as the other alone has been published with a character by DeCandolle, and more perfectly by De Jussieu, we do not feel ourselves at liberty to do away with the latter.

524. (1.) Francoa *appendiculata*, Cav. *ic. v.* 6. *t.* 596, (pessime.) Graham *in Bot. Mag. t.* 3178, (opt.) Don, *in Sweet Brit. Fl. Gard. t.* 151.—F. sonchifolia, Ad. de Juss. *in Ann. des Sc. Nat. v.* 3. *p.* 197. *t.* 12.?—Chiloe, *Cuming* (*N.* 827.)—This species is to be distinguished from the next by the sessile, not decurrent leaves, which, we believe, have always their lobes quite distinct and at a little distance from each other. There is almost no stem. The lobes of the stigma are cuneiform, and crenulato-incise.

525. (2.) Francoa *sonchifolia*, Cav. *ic. v.* 6. *p.* 77. (in observ.)—Llaupanke amplissimo sonchifolio, Feuill. *Chil. v.* 2. *t.* 31.—Conception, *Cuming* (*N.* 826.)—Our specimens, gathered nearly at the station given by Feuillée, have decurrent leaves, as in his figure, and evidently a stem of some length. The segments of the leaves are closely approximate, and slightly overlap each other. The lobes of the stigma are ovated and entire.

526. (3.) Francoa *ramosa*, Don, *in Ed. N. Phil. Journ. N.* 11. *p.* 52.—Quebrada de las Lacunas, near Valparaiso, *Bridges*, 1832, (*N.* 197.) Valparaiso, *Cuming* (*N.* 779.)—Mr. Don has kindly informed us that the character given by him of this species, from an imperfect specimen, is faulty; and that Cuming's *N.* 197 only differs by the acuminate calycine segments, and longer petals. This species has the short stems and sessile leaves of *F. appendiculata*, but their lobes are approximate, as in *F. sonchifolia*.

527. (1.) Tetragonia *expansa,* Ait.—*α.* foliis subtus glabris.—Conception, *Messrs. Lay* and *Collie.*—*β.* foliis subtus dense incanis.—Valparaiso, *Cuming* (*N.* 391.)—*γ.* minor glabra.—Uraguay, *Tweedie.*

528. (2.) Tetragonia *crystallina,* L'Her.—Valparaiso, *Macrae.* Coquimbo, *Cuming* (*N.* 866, 867, 868.)—The two first numbers of Cuming are apparently shrubby, and if really so, which we cannot decide from our specimens, they may probably be made a distinct species.—*Mesembryanthemum Doca,* Miers, Chil. can scarcely be this plant. We have not yet been able to ascertain what plants Cavanilles (*ic. v.* 6. *p.* 61.) had in view, when he says that *T. herbacea* and *T. fruticosa* are found at Mendoza.

529. (1.) Glinus *lotoides,* Linn.—Buenos Ayres, *Tweedie.*

530. (1.) Sesuvium *Portulacastrum,* Linn.—*β. subsessiliflora.* S. sessile, Pers.—S. parviflorum, DeCand.—Trianthema Americana, Gill. *mst. in Ed. Journ. Nat. and Geogr. Sc. June,* 1831, *p.* 354.—Near Laguna del Arbolita, on the west side of Rio del Saladillo, forming the western limit of the Pampas, *Dr. Gillies.*

531. (1.) Ribes *cuneifolium,* R. et. P.—Mountains between Chili and Mendoza, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 190.) Near Los Ojos de Agua, and Los Locos, in the Cordilleras, *Bridges,* 1832, (*N.* 373 and 374.)

532. (2.) Ribes *cucullatum,* (Hook. et Arn.); inerme, ramis glabris, foliis glabris sub-5-lobatis rotundato-reniformibus basi cucullatis cuneatis lobis sibi mutuo incumbentibus acutiuscule inciso-lobatis, petiolo foliis paullo breviore, racemis vix puberulis axillaribus brevibus paucifloris, floribus subsessilibus bracteas subrotundas vix superantibus.—Cordillera of Chili, *Cuming* (*N.* 189.)—Nearly allied to *R. cuneifolium,* but apparently quite distinct.

533. (3.) Ribes *glandulosum,* R. et P.—Mountains between Mendoza and Chili, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 269.) Bella Vista de Aconcagua, *Bridges,* 1832, (*N.* 372.)

534. (4.) Ribes *punctatum,* R. et P.—Valparaiso, *Mathews* (*N.* 252); *Mr. Cruckshanks; Bridges,* 1832 (*N.* 371.); *Macrae; Cuming* (*N.* 640.) Conception, *Messrs. Lay* and *Collie.*

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535. (1.) Escallonia *Montevidensis,* DeCand.—E. floribunda, *Reich.* (*non* H. B. K.)—E. bifida, *Link et Ott.*—Sandy banks and pastures of the Rio Uraguay, *Tweedie.*

536. (2.) Escallonia *Berteriana,* DeCand. *Prod. v.* 4. *p.* 665.—Banks of rivers and valleys in Chili, as at La Guardia del Maypu, Banks of Rio Maule, Valle del Rio Tinguirica and Casa blanca, *Dr. Gillies.*—Nom. vernac. *Corontillo.*—Our specimens have harsh foliage, like a large-leaved *Andromeda.*

537. (3.) Escallonia *pulverulenta,* R. et P.—Banks of Rio Maule, Chili, *Dr. Gillies.* Valparaiso, *Messrs. Lay* and *Collie; Bridges,* 1832, (*N.* 174.); *Mr. Cruckshanks; Cuming* (*N.* 351.)

538. (4.) Escallonia *revoluta,* R. et P.—Valparaiso, *Mr. Cruckshanks; Messrs. Lay* and *Collie.* Chili, *Cuming* (*N.* 81.) Banks of rivulets at Valparaiso and Quillota, *Bridges,* 1832, (*N.* 170.)—Nom. vernac. *Lun.*—From 10 to 20 feet high.

539. (5.) Escallonia (*Sect.* Stereoxylon, *Presl,*) *macrantha* (Hook. et Arn.); ramis pubescentibus glandulosis, foliis ovato-ellipticis obtusiuculis basi cuneatis glabris subtus resinoso-punctatis obtuse crenato-serratis, pedunculis inferioribus simplicibus axillaribus superioribus racemosis, bracteolis nullis aut minutissimis, dentibus calycinis subulatis.—Chiloe, *Cuming,* (*N.* 26.)—The flowers of this species are much larger than in the next, and the leaves considerably broader. The petals are connivent.

540. (6.) Escallonia *rubra,* R. et P.—α. *glabriuscula;* ramis

glandulosis vix pubescentibus, foliis glabris, floribus rubris.—Near La Guardia, Andes of Chili, *Dr. Gillies.* Valparaiso, *Mr. Menzies; Mr. Cruckshanks; Mathews; Bridges*, 1832, (*N.* 173.) Chili, *Cuming* (*N.* 79, 80.)—*β. albiflora;* floribus albis. E. glandulosa, Lodd. *Cab. t.* 1291.—Chili, *Cuming* (*N.* 82.) Province of Maule, *Cuming* (*N.* 846.)—*γ. pubescens;* ramis vix glandulosis pubescenti-villosis, foliis supra minus subtus dense pubescentibus, floribus rubris.—Andes of Chili, *Dr. Gillies.* Chili, *Cuming* (*N.* 83.)—We have already remarked (*Bot. of Beech. Voy. p.* 56.) how variable this species is, and that we know of no character to separate *E. Poppigiana:* indeed we have scarcely ever seen two specimens alike. We have, however, endeavoured to class those with which we are acquainted, into three varieties; all of them have sharp leaves, which are also sharply and unequally serrated, and spotted, particularly beneath, with resinous dots; the petals are connivent. A cultivated specimen of *E. glandulosa*, Lodd. proves it to be our var. *β.*; but we feel disposed to refer what is figured in *Sweet, Brit. Fl. Gard. t.* 81., to *E. Grahamiana.*

541. (7.) Escallonia (*Sect.* Stereoxylon, *Presl,*) *Callcottiæ* (Hook. et Arn.); ramis glabriusculis eglandulosis, foliis ovatis oblongis ovalibus subrotundisve utrinque acutis petiolatis glabris eglandulosis adpresse argute serrulatis, floribus paniculatis, petalis longe unguiculatis erectis, dentibus calycinis subulatis.—Juan Fernandez, *Mrs. Callcott* (late Mrs. Maria Graham); *Dr. Scouler; Douglas; Bertero.*—The lower peduncles of the raceme are branched, thus forming a panicle. The toothed urceolus at the base of the style is not so conspicuous as in most others of the section.

542. (8.) Escallonia *arguta*, Presl, *in Reliq. Hænk. v.* 2. *p.* 48. *t.* 58.—E. microcarpa, Gill. *mst.*—E. reflexa, Gill. *mst.* —E. myrtoidea, Gill. (vix Bertero.)—San Gabriel, La Guardia, and La Cuesta del Inga, Andes of Chili; and Valle del Rio Claro in Chili, *Dr. Gillies.*—Nom.

vernac. *Lun.*—The fruit of this species, if we have rightly referred our specimens, is small, and scarcely more than a line in length. The raceme is very compact, and the flowers nearly sessile. Perhaps it may prove a mere state of *E. rubra.*

543. (9.) Escallonia (*Sect.* Stereoxylon) *Grahamiana* (Gill. *mst.*); omnino glabra, ramis strictis angulatis subresinosis, foliis elliptico-oblongis obtusiusculis basi paullo attenuatis crenato-serratis subtus parcissime resinoso-punctatis, floribus compacte paniculatis breve pedicellatis, fructu obconico, laciniis calycinis subulatis.—E. glandulosa, *Sweet, Brit. Fl. Gard. t.* 81.—El Valle del Rio Tinguirica, Chili, *Dr. Gillies; Mr. Cruckshanks.*—The branches of the panicle contain each three or four flowers, on pedicels scarcely a line long: the fruit or tube of the calyx is about twice as long as it is broad, and twice or thrice the length of the pedicel.

544. (10.) Escallonia *illinita*, Presl, *l. c. p.* 49. *t.* 59.—*α.* foliis utrinque precipue supra resinoso-nitidis.—Chili; *Cuming* (*N.* 78.) El Arroyo de los Lunes, Valle del Rio Tinguirica, *Dr. Gillies.*—*β.* foliis subtus minute glanduliferis. E. cupularis, Gill. *mst.*—La Siente Vieja and La Cuesta de Chacabuco, Chili, *Dr. Gillies.* La Laguna, near Valparaiso, *Bridges*, 1832 (*N.* 172.)—Our var. *β.* is, perhaps, a distinct species: the glands beneath sometimes pass into a kind of pubescence. Dr. Gillies informs us that *α.* is termed *Lun*, and *β. Araca* or *Arayan*, by the natives.

545. (1.) Caldcluvia *paniculata*, Don *in Ed. New Phil. Journ. N.* 17. *p.* 92.—Dietrica paniculata, Ser. in DeCand. *Prod. v.* 4. *p.* 8.—Weinmannia paniculata, Cav.—W. Chilensis, DC. *Prod. v.* 4. *p.* 665.—Moist places at Conception, *Cuming* (*N.* 113.)

546. (1.) Weinmannia *trichosperma*, Cav.—Chiloe, *Cuming* (*N.* 35.)—The hypogynous urceolate disk is very minute; but the calyx is not deciduous, as Presl (*Reliq. Hænk.*

*v.* 2. *p.* 53.) states.—It ought not therefore to be separated from the genus.

547. (1.) Cornidia *integerrima* (Hook. et Arn.); foliis subrotundo-ellipticis glabris vix basi apiceque acutis, corymbis plurimis in racemum terminalem folia multoties superantem dispositis.—Hydrangea scandens, *Poepp.?* in De Cand. *Prod. v.* 4. *p.* 666.—Valparaiso, *Cuming* (*N.* 398.) Near Bustamante, *Bridges*, 1832 (*N.* 532.)—If DeCandolle and Poeppig be correct in their description, and we be correct in our reference, then this plant has a scandent stem, of which, however, no appearance exists in our specimens.—It is remarkable that neither DeCandolle nor Presl were aware that their well-characterised *Sarcostylis Peruviana* was identical with *Cornidia umbellata* of the *Floræ Peruvianæ Prodr.* (and *v.* 4. *t.* 335. *ined.*); and it is readily recognised from our two new ones by the solitary terminal corymb which is scarcely so long as the leaves.

548. (2.) Cornidia *serratifolia* (Hook. et Arn.); foliis obovato-oblongis acutis basi obtusis sursum serratis, in ramos florales minoribus ovatis rariter denticulatis, corymbis plurimis in racemum terminalem folia superantem dispositis.—Chiloe, *Cuming* (*N.* 34.)—Closely allied to the last species, but apparently distinct. Both, but especially the present one, have several decussate, patent, rigid, concave bracteæ along the stalks of the corymbs, in addition to the large deciduous petaloid ones at the base of the corymb itself.

### CRYPTOPETALUM (Hook. et Arn.)

*Calyx* turbinatus, 5-fidus, herbaceus, laciniis ovatis acutis patulis. *Petala* 5, tubo calycis inserta, ejusque laciniis alterna inclusa, minuta, spathulata. *Stamina* 5, tubo inserta, petalis alternantia, parva, subinclusa; *filamenta* filiformia; *antheræ* minutæ, subrotundæ, aurantiacæ, biloculares. *Germen* subglobosum, parte inferiore cum calyce adhærens, superiore liberum, uniloculare. *Pla-*

*centæ* tres, parietales, lineares, divaricato-bilamellatæ, pluriovulatæ, *ovula* tenuissima membranacea. *Styli* tres, breves, vix basi coadunati, erecti: *stigmata* capitata minute papillosa. *Capsula* globosa, calyce persistente inclusa, 1-locularis, in parte libera loculicide trivalvis, valvis stylo persistente terminatis. *Semina* plurima, pallida, ovalia, utrinque obtusa, punctata: *albumen* tenue, carnosum. *Embryo* rectus, centralis, albus.—Herba *annua, glabra, pusilla, semipollicaris.* Caulis *erectus, dichotome ramosus.* Rami *divaricati.* Folia *alterna, spathulata, integerrima, carnosula, vix nervosa.* Flores *terminales, ratione plantæ magni,* Chrysosplenii *æmulantes.*

549. (1.) C. *pusillum* (Hook. et Arn.)—Quintero in Chili, *Bridges*, 1832, (*N.* 528.)—We place this curious little genus at the end of *Saxifrageæ,* not that we would affirm that it certainly belongs to that Order, but because there is no other with which it appears so much allied. With some genera it agrees in the number of stamens, and with *Chrysosplenium* in many particulars, as in the one-celled many-seeded fruit, in the calyx, and in the number of stamens, if we suppose the parts we have described as petals to be abortive stamens: but from all it appears to differ by the loculicidal, not septicidal dehiscence of the capsule. This, and some other of the more novel plants described in the present number, will be soon figured in the continuation of this work.*

550. (1.) Hydrocotyle *pusilla,* Rich.?—Buenos Ayres, *Tweedie.* —This only differs from Richard's and DeCandolle's description by the petioles and whole plant being perfectly glabrous.

551. (2.) Hydrocotyle *modesta,* Cham. et Schlecht.—Valpa-

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* We cannot conclude the *Saxifrageæ* without observing, that no species of the genus *Saxifraga* has, so far as we know, been yet found in Chili, or even in any part of the extratropical hemisphere.

raiso, *Mr. Bridges*, 1832, (*N.* 236.); *Cuming*, (*N.* 375.) —The specimens from Cuming are about the size of *H. pusilla*, from which they are only to be recognized by the greater number of the flowers, and the acute sinus at the base of the leaf.

552. (3.) Hydrocotyle *Bonariensis*, Lam.—Between Mendoza and Buenos Ayres, *Dr. Gillies.* Buenos Ayres, *Tweedie.*

553. (4.) Hydrocotyle *ranunculoides*, Linn.—Valparaiso, *Mr. Bridges*, 1832, (*N.* 237.)

554. (1.) Crantzia *attenuata*(Hook et Arn.); foliis elongatis attenuatis pedunculo triplo longioribus.—Buenos Ayres, *Tweedie.*—This is an undoubted *Crantzia*, having the same peculiar structure of the leaves as *C. linearis* of North America, differing, however, remarkably in its much longer and attenuated foliage.

555. (1.) Bowlesia *tropæolifolia*, Gill. et Hook. *in Bot. Miscell. v.* 1. *p.* 325.—El Salto de San Isedro, near Mendoza, (6000 feet,) *Dr. Gillies.*—*β. tripartita*; foliorum lobis utrinque duobus inferioribus approximatis parvis a medio grosse tridentato productiori divaricatis.—Valparaiso, *Cuming* (*N.* 597.)

556. (2.) Bowlesia *tenera*, Spr.—Link et Otto, *Neu. Abild. t.* 4. —B. geraniifolia, Cham. et Schlecht.—Hook. et Gill. *l. c. p.* 324.—B. nodiflora, Presl.—Valparaiso, *Bridges*, 1832 (*N.* 73.); Cuming (*N.* 602.) Conception, *Messrs. Lay* and *Collie.* Buenos Ayres, *Dr. Gillies*; *Tweedie.* —Chamisso describes the stem as erect and flaccid; but as he states his specimens to be imperfect, we do not place much reliance on that character. The length of the peduncles is subject to vary from a line or two to about an inch.

557. (3.) Bowlesia *dichotoma*, Poepp. *in DeCand. Prod. v.* 4. *p.* 76.—Valparaiso, *Bridges*, 1832, (*N.* 72.); *Cuming*, (*N.* 623.); *Mr. Cruckshanks.* Baths of Collina, *Macrae.*—This species, like the others, varies much in the

proportionate length of the peduncles and leaves; the peduncles are, however, very seldom so long as DeCandolle describes, being usually much shorter than the petioles.

558. (1.) Azorella *Gilliesii*, Hook. et Arn.—Bolax Gilliesii, Hook. *l. c. p.* 326. *t.* 63.—Valley of Uspallata, Andes of Mendoza (6000–12,000 feet,) *Dr. Gillies.*—When this species was described, a remark was made, that it did not well agree with *Bolax:* we now, therefore, place it in *Azorella*, in which the fruit has no external ridges, and from this it only differs by the mericarps being perfectly convex at the back, and not in the slightest degree compressed.

559. (1.) Mulinum *cuneatum*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 26.—Fragosa spinosa, R. et P.—DeCand. *Prod. v.* 4. *p.* 76.—Valparaiso, *Messrs. Lay* and *Collie; Mr. Cruckshanks: Mathews,* (*N.* 253.); *Cuming,* (*N.* 633.) Mountains of Valparaiso, *Bridges,* 1832, (*N.* 71.)

560. (2.) Mulinum *spinosum*, Pers.—Between Los Ojos de Agua and El Rio de Los Ojos de Agua, Andes of Chili; and near Villavicenzio (5500 to 7000 feet,) *Dr. Gillies.*—Cordillera of Chili, *Cuming,* (*N.* 320, *bis.*); *Bridges,* 1832, (*N.* 70.)

561. (3.) Mulinum *proliferum*, Pers.—Frequent in the Andes of Mendoza, between San Isedro and Portezuela, *Dr. Gillies.*

562. (4.) Mulinum *ulicinum*, Gill. et Hook. *l. c. p.* 328. *t.* 64. —M. Echinus, DeCand.—La Cienega de Bonilla, near the top of the Uspallata range, (9500 feet,) *Dr. Gillies.* —We think there can be no doubt of *M. Echinus* being identical with our plant, although DeCandolle has omitted to notice the subsessile umbels.

563. (5.) Mulinum *albovaginatum*, Gill. et Hook. *l. c. p.* 328.—Cerro de la Polcura, Andes of Mendoza, *Dr. Gillies.*

564. (1.) Laretia *acaulis*, Gill. et Hook. *l. c. p.* 329. *t.* 65.—

Selinum acaule, Cav.—El Valle de Fray Carlos in the Andes of Chili, (10,000 to 11,000 feet,) *Dr. Gillies.* Cordillera of Chili, *Cuming*, (*N.* 320.) Los Ojos de Agua, *Bridges*, 1832, (*N.* 251.)

### HOMALOCARPUS (Hook. et Arn.)

*Calycis* margo 5-dentatus, dentibus subulatis, minutis, vix persistentibus. *Petala* ovalia, concava, integra. *Styli* duo divaricati, breves. *Fructus* rotundato-ovalis: *mericarpia* a dorso compresso-plana aptera, *commisura* angustissima juncta, discos duos parallelos constituentia: *Juga* quinque filiformia tenuissima in pericarpii substantia recondita, unicum dorsale, duo lateralia prope rachin, duo media angulos formantia. *Vittæ* nullæ. *Carpophorum* integrum. *Semen* fructus cavitate minus.—Herba *annua, erectiuscula, tota pilis stellatis incana, dichotome ramosa.* Radix *simplex, tenuis.* Folia *petiolata, reniformia, subrotunda, sub-7-lobata, lobis æqualibus ovatis obtusis integerrimis vel inciso-lobatis, inferiora alterna, superiora opposita.* Pedunculi *axillares et terminales, petiolum subæquantes.* Umbella *simplex*, 3–6-*flora.* Calycis dentes *pilosi, et fere fasciculum pilorum emulantes.* Fructus *pedicello lineam longo fere duplo longior.*

565. (1.) H. *Bowlesioides* (Hook. et Arn.)—Cordillera of Chili, *Cuming*, (*N.* 277.)—The leaves and the pubescence are those of a *Bowlesia*, as is the few-flowered umbel: but the fruit brings this genus among the tribe of *Mulineæ*, and near *Spananthe.* The ridges are only to be perceived on a section of the fruit, and are sunk in the thin substance of the pericarp. The middle ridges do not expand into wings, as in *Mulinum*, and some other allied genera.

566. (1.) Pozoa *coriacea*, Lag.—Gill. et Hook. *l. c. p.* 330. *t.* 66.—Mulinum angulatum, DeCand. *Prod. v.* 4. *p.* 80. (stat. junior.)—Hacquetia bracteogama, DeCand. *l. c.*

*p.* 668.—Cordillera of Chili, in various places, (9000 to 10,000 feet,) *Dr. Gillies.*

567. (1.) Asteriscium *Chilense,* Cham. et Schlecht.—DeCand. Gill. et Hook. *l. c. p.* 332. *t.* 67. A.—A. Poeppigii, De Cand. *Prod. v.* 4. *p.* 82.—Anisillo vulgo *Mouchu,* Feuill. Chil. *v.* 3. *t.* 2.—La Cuesta de Zapata in Chili, (1600 feet,) *Dr. Gillies.* Cliffs by the sea-side, Valparaiso, *Mathews,* (*N.* 328.); *Cuming,* (*N.* 559.); *Bridges,* 1832, (*N.* 473.)—The distinguishing characters between De Candolle's two species occur on the same specimen.

568. (2.) Asteriscium *polycephalum,* Gill. et Hook. *l. c. p.* 332. *t.* 67. B.—Mulinum Dipterygia, DeCand. *Prod. v.* 4. *p.* 80.—Andes of Mendoza (7500 feet), *Dr. Gillies.*—The inflexed petals of this species and the next forbid their being united to *Mulinum.*

569. (3.) Asteriscium *isatidicarpum,* (Hook. et Arn.)—Mulinum isatidicarpum, DeCand. *l. c.*—Cordillera of Chili, *Cuming* (*N.* 302.); *Bridges,* 1832, (*N.* 69.)

570. (1.) Sanicula *Liberta,* Cham. et Schlecht.—*S. crassicaulis,* Poepp.—Conception, *Messrs. Lay* and *Collie.* Stony valleys near Valparaiso, *Cuming* (*N.* 436.); *Mathews* (*N.* 208.); *Bridges,* 1832, (*N.* 474.)—Nom. vernac. *Pato de Leon.*—DeCandolle not having observed the few pedicellate male flowers that are mixed with the sessile female ones, has supposed them all to be hermaphrodite, and inadvertently admitted Poeppig's plant as a species: all have polygamous flowers, except, perhaps, *S. Triclinium,* which, however, is involved in doubt.

571. (2.) Sanicula *graveolens,* Poepp.—Valparaiso, *Mr. Cruckshanks; Bridges,* 1832, (*N.* 471.); *Mathews,* (*N.* 274.); *Cuming,* (*N.* 507.)—Although this species has an appearance alien to the genus, yet so far from its forming a new one, as DeCandolle supposes, it does not even constitute a distinct section. The male flowers are most numerous and shortly pedicellate, but the sessile female

flowers are not solitary, but several in each umbel. The tube of the male calyx is smooth, that of the female is echinate.

572. (1.) Eryngium *divaricatum* (Hook. et Arn.); perenne, caulibus prostratis dichotome divaricatis foliosis rigidis, foliis inferioribus bipinnatifidis caulinis pinnatifidis, laciniis linearibus spinescentibus divaricatis, pedunculis axillaribus et in dichotomiis brevibus, involucri foliolis subulatis reflexis capitulo elliptico quadruplo brevioribus, paleis flores vix æquantibus.—Buenos Ayres, *Tweedie.*

573. (2.) Eryngium *flaccidum* (Hook. et Arn.); annuum, foliis radicalibus flaccidis longe petiolatis profunde pinnatifidis, segmentis linearibus spinescentibus sursum spectantibus, caule gracili superne paniculato, involucri foliolis lineari-lanceolatis rigidis acutis integerrimis capitula elliptica æquantibus, paleis flores vix æquantibus. —Buenos Ayres, *Tweedie.*

574. (3.) Eryngium *coronatum* (Hook. et Arn.); perenne, foliis radicalibus lanceolatis spinoso-pinnatifidis, laciniis lanceolato-subulatis patentibus, caule superne paniculato polycephalo, involucri foliolis lineari-subulatis spinosis integerrimis reflexis capitulum cylindraceum subæquantibus, paleis oblongis acutis pallidis flores æquantibus supremis 2–4 in cornua longa excrescentibus involucri foliola æmulantibus.—Buenos Ayres, *Tweedie.*—Stem from 6 to 8 inches high.

575. (4.) Eryngium *rostratum*, Cav. *ic. v.* 6. *t.* 552.—Valparaiso, Cuming, *N.* 574. La Placilla near Valparaiso, *Bridges*, 1832, (*N.* 175.)

576. (5.) Eryngium *anomalum*, (Hook. et Arn.); radice annua simplici, foliis apice grosse crenato-dentatis radicalibus rotundatis basi cuneatis petiolatis, caulinis superioribus cuneatis, capitulis breve pedunculatis, involucri foliolis paleisque subæqualibus oblongis mucronato-spinosis integerrimis flores sessiles multo superantibus, fructu vesiculis papilloso.—Valparaiso, *Cuming* (*N.* 361.)—The fruit and the paleæ or bracteæ among the flowers

induce us to refer this to *Eryngium*, to which, however, its appearance is altogether foreign.

577. (6.) Eryngium *depressum* (Hook. et Arn.); acaule, radice annua, foliis radicalibus lineari-oblongis spathulatis spinoso-dentatis, nervis in limbo divergenti-subramosis, ramis e collo radicis plurimis cæspitosis diffusis dichotomis, capitulis ramulos terminantibus et in dichotomiis, involucri foliolis paleisque subæqualibus subulatis spinosis integerrimis vel spinula brevi utrinque ad medium notatis flores sessiles multoties superantibus.—*α. rigidum;* ramis folium subæquantibus rigidis semel bisve tantum furcatis.—*β. flaccidum;* ramis folia superantibus elongatis gracilibus trichotome divisis.—*α.* Chiloe, *Cuming* (*N.* 61.); Vina de la Mar, near Valparaiso; *Bridges.*—*β.* Valparaiso, *Cuming* (*N.* 390.) Casa Blanca, *Bridges*, 1832 (*N.* 176.)

578. (7.) Eryngium *nudicaule*, Lam.—Cerro del Morro, in the Province of San Luis (4500 feet,) *Dr. Gillies;* coast of Arroyo del Chuelo, Entre Rios, *Tweedie.*—The teeth of the leaves are sometimes entire and not again ciliated, and this brings the species very near *E. serratum*, Cav. All the above species, except the first, belong to DeCandolle's third groupe of his first section.

579. (8.) Eryngium *aquaticum*, Linn.—Banks of El Rio Chuelo, near Buenos Ayres, *Dr. Gillies; Tweedie.*

580. (9.) Eryngium *paniculatum*, Laroch.—E. aquaticum, Cav. *ic. v. 6. p.* 17 and 35. in observ. (non Linn.)—Near La Guardia del Portrero in Valle del Rio Maypu, Chili; and Cerro del Morro in the Province of San Luis, *Dr. Gillies.* Valparaiso; *Cuming* (*N.* 575.)

581. (10.) Eryngium *nudum*, Gill. et Hook. *in Bot. Miscell. v.* 1. *p.* 334.—Pampas of Buenos Ayres, *Dr. Gillies.*

582. (11.) Eryngium *ebracteatum*, Lam.—All along the coast of the Parana, near Santa Fée, *Tweedie.*

### Subgenus LESSONIA

*Frutices, vel arbores parvi; rami dichotomi inferne foliorum delapsorum cicatricibus notati, ad extremitates dense foliosi.*

*Pedunculi terminales capitula globosa vel hæmisphærica solitaria gerentes!*

583. (12.) Eryngium *bupleuroides* (Hook. et Arn.); arborescens, foliis planis serratis, involucri foliolis capitulo brevioribus.—Lessonia bupleuroides, Bert. *mst.*—Lessonia, Bert. *in Ann. des Sc. Nat. v.* 21. *p.* 348.—Woody, stony, elevated situations at El Portezuelo, Juan Fernandez, *Mrs. Maria Graham; Bertero, N.* 1471.—This and the next are very singular and beautiful plants, with the flowers, indeed, of an *Eryngium*, but with a totally different habit, for they constitute small trees, 5 to 7 feet in height, with forked, terete branches. In the present species, the branches are clothed with a brown shining bark; the leaves are 3 to 4 inches long, lanceolate, broader upwards, serrated, between coriaceous and membranaceous, quite glabrous, marked all over with many branched, but nearly parallel nerves, the margin slightly incrassated, the sessile base almost entirely amplexicaul. Peduncles solitary, terminal, scarcely so long as the leaves, bearing a solitary, terminal, hemispherical head of very dense flowers. Involucre of several spreading lanceolato-subulate striated entire leaves, much shorter than the capitulum. Paleæ scariose, not rigid, shorter than the flowers. Germens muricated, crowned with five evident, linear-lanceolate, erect teeth. Stamens with long filaments. Anthers ovato-oblong. Petals erect, with an inflexed point. Styles exceedingly long and patent.

584. (13.) Eryngium *sarcophyllum* (Hook. et Arn.); arborescens, foliis cylindraceis carnosis, involucro omnino nullo. —Massa Fuera, near Juan Fernandez, *Cuming* (*N.* 1355.) —Although so very different in the substance of its leaves, this is evidently of the same genus as the last, having equally woody and dischotomous stems, but these are more rugged with the membranaceous bases of the fallen leaves. The peduncles are thick and stout, longer than the leaves, one to five at the extremity of

the branches. There is no involucre, the heads of flowers are exactly globose, and the paleæ are as in the last species. Fruit exactly that of an *Eryngium*, slightly 4-angular, and minutely tuberculated. Styles much shorter than in *E. bupleuroides.*—If characters be afterwards found to distinguish this section as a genus, the name given by Bertero must be changed, in consequence of a previous *Lessonia* of Bory de St. Vincent; but we ourselves cannot perceive any sufficient difference in the flower or fruit from those of *Eryngium.*

585. (1.) Apium *graveolens,* Linn.—El Lagunillo, near Mendoza, *Dr. Gillies.*

586. (2.) Apium *Chilense,* (Hook. et Arn.); glabrum, caule subtereti vix angulato, foliis patentibus bipinnatisectis, lobis cuneatis subtrifido-incisis integerrimis, petalis apice involutis.—Valparaiso, *Mathews* (*N.* 357. in herb. Hook.); *Cuming* (*N.* 447.)—Much stouter than *A. graveolens,* and the stem not deeply furrowed, as in that species. The leaves resemble those of *Petroselinum sativum,* but are smaller, and more flaccid. The peduncles, or short lateral branches, are stout and firm. The fruit, although far from mature, is more than double the size of that of *A. graveolens.* There are no involucra, nor involucella.

587. (1.) Petroselinum *sativum?* Hoffm.—Conception, *Messrs. Lay* and *Collie.*

588. (1.) Helosciadium *leptophyllum,* DeCand.—Pampas of Buenos Ayres, *Dr. Gillies.* Orchards and old cultivated places at Buenos Ayres, *Tweedie.*

589. (2.) Helosciadium *laciniatum,* DeCand.—*α. elatius.*—Cordillera of Chili, *Cuming* (*N.* 250.) Aconcagua, *Bridges,* 1832, (*N.* 477.)—*β. humile.*—Valparaiso, *Cuming* (*N.* 588.); *Bridges,* 1832, (*N.* 476.)—We can see no other difference between these two varieties than that the latter is extremely small, from growing in a more

arid and exposed situation. We even entertain doubts if this species be distinct from *H. leptophyllum.*

590. (3.) Helosciadium *ranunculifolium*, DeCand. ?—H. lateriflorum, Hook. et Arn. *in Bot. of Beech. Voy.*—Rio Saladillo, in the Province of Cordova, *Dr. Gillies.* Buenos Ayres, *Tweedie.* Valparaiso, *Cuming* (*N.* 515.) *Bridges*, 1832, (*N.* 18.)—Nom. vernac. *Janul.* (*Bridges.*) —Dr. Gillies' specimens, although from a very different locality, and in a different state, appear specifically the same as those from Cuming; and if we be correct in this opinion, the peduncles vary considerably in length, being sometimes extremely short, and sometimes two or three inches long. The ridges on the fruit are very prominent, thick, and obtuse: the valleculæ broad and flat. The leaves bear no resemblance to those of a *Ranunculus*, and hence arise our doubts of its being the plant intended by DeCandolle.

591. (1.) Ammi *Visnaga*, Lam.—Mendoza and Hacienda de Vasquez, between Casa Blanca and Valparaiso in Chili, *Dr. Gillies.* Valparaiso, *Messrs. Lay* and *Collie.* Valparaiso and Quillota, *Bridges*, 1832, (*N.* 162.) Chili, *Cuming* (*N.* 91.)

592. (1.) Seseli *Gilliesii*, (Hook. et Arn.); pubescenti-incanum, caule angulato, ramis paucis erectis, foliis pinnatisectis, inferiorum lobis cuneatis inciso-dentatis superiorum linearibus integris bipartitisve, involucro oligophyllo vel nullo, involucelli foliolis linearibus pedicellos superantibus, fructibus (junioribus) ovatis pubescentibus, stylis elongatis, stigmate globoso capitato.—Petroselinum sativum, Hook. et Gill. *l. c. p.* 335. Valle de la Punta de las Vacas, Andes of Mendoza, *Dr. Gillies.*—The flowers are white. In the young fruit the ridges are scarcely visible.

593. (1.) Ligusticum *Pansil*, Bert. ? *in DeCand. Prod. v.* 4. *p.* 669.—Valparaiso, *Mathews*, (*N.* 357.) (in herb. Arn.)

594. (1.) Anethum *graveolens*, Linn.—Fœniculum vulgare, Hook. et Gill. *l. c.*, non Gært.—Hedges at Buenos Ayres, common, *Dr. Gillies.*

595. (1.) Pastinaca *sativa*, Linn.—Buenos Ayres, *Tweedie.*—Introduced.

596. (1.) Daucus *australis*, Poepp. *in DeCand. Prod. v.* 4. *p.* 214.—D. Carota, Gill. et Hook. *l. c. p.* 335.—Mendoza, *Dr. Gillies.* Valparaiso, *Cuming* (*N.* 420.)

597. (1.) Torilis *nodosa*, Gært.—Caucalis lappulacea, Poepp. —Valparaiso, *Mathews*, (*N.* 221.); *Bridges*, 1832, (*N.* 472.) Buenos Ayres, *Tweedie.*

598. (1.) Myrrhis *odorata*, Scop.—At Ladera de las Vacas, near Valle Hermoso, and in Quebrada de Rios, Andes of Mendoza and Chili, *Dr. Gillies.*

599. (1.) Osmorrhiza *Chilensis*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 26.—O. Berterii, DeCand. *Prod. v.* 4. *p.* 232.—Scandix Chilensis, Mol.—DeCand. *l. c. p.* 222.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Cuming* (*N.* 335.)

600. (1.) Coriandrum *sativum*, Linn.—Pampas of Buenos Ayres, *Dr. Gillies.*

601. (1.) Smyrnium *Olusatrum*, Linn.—Buenos Ayres, *Tweedie.*

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602. (1.) Viscum *Liga*, (Gill. *mst.*); ramis teretibus junioribus compressis, foliis rectis lineari-oblongis obtusis vix apiculatis basi attenuatis triveniis medio subpenniveniis, spicis solitariis axillaribus oppositis folio duplo triplove brevioribus, vaginulis carinatis acutis, baccis ovatis omnino exsertis.—On trees near Los Cerillos de San Juan, *Dr. Gillies.*—Nom. vernac. *Liga.*—This seems very nearly allied to *V. affine*, Pohl.

603. (2.) Viscum *falcifrons*, (Hook. et Arn.); ramis teretibus junioribus compressis, foliis anguste lanceolatis obtusiusculis recurvato-falcatis basi in petiolum attenuatis obscure 3–5-veniis, spicis axillaribus solitariis oppositis folio subduplo brevioribus, vaginulis truncatis.—Upon Laurels by the River Uraguay, *Tweedie.*—The vaginulæ of the spikes are here formed of two opposite and equal portions: in *V. Liga* they are carinate at the back and acute at the extremity; in the present they are convex, without a carina, and the apex is truncate or rounded. We suspect that many species belonging to the tribe "ramulis ancipitibus compressisve," are inserted by DeCandolle elsewhere.

604. (3.) Viscum *Chilense*, Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 25.—Conception, *Messrs. Lay* and *Collie.*

605. (4.) Viscum *ambiguum*, (Hook. et Arn.); aphyllum, ramis teretibus inarticulatis evaginatis, spicis apicem versus ramorum alternis oblongo-linearibus evaginulatis, floribus trinerviis sessilibus squama concava obtusa paullo longioribus.—Upon Myrtles by the River Uraguay, *Tweedie.*—The flowers (of which we have only seen the female state) are very minute, and each situated on the spike, in the bosom of a concave scale. The whole, including the germen, is plano-convex, the inner or flat side being marked with a longitudinal furrow. The two lateral petals are carinate, the dorsal one nearly plane. Style short and thick; stigma truncated. In *Viscum* the margin of the calyx in the female flowers is usually conspicuous, but in this species it is so entirely wanting as almost to induce a belief that the three petals, which are apparently of the same texture as the tube of the calyx, form its limb; and if this really were so, it ought to form a genus next to *Tupeia*, Cham. et Schl. (*Linnæa, v.* 3. *p.* 203.), which seems in the same predicament.

606. (1.) Misodendrum *oblongifolium*, DeCand. *Prod. v.* 4. *p.* 671.—Chiloe, *Cuming* (*N.* 39.)—As DeCandolle's view of the structure of this genus is very different from

the result of our observations, we subjoin[*] a description of the fruit, whence it will appear that it belongs truly to the *Loranthaceæ;* and that the calyculus that surrounds the base of the calyx so universally in the family, is in this genus represented by the plumose bristles and exterior adnate bracteas.

607. (2.) Misodendrum *microphyllum*, (Hook. et Arn.); foliis minutis linearibus, floribus ad axillas foliorum in ramulos pubescentes sessilibus solitariis. — Province of Maule, *Cuming* (*N.* 847.)—Closely allied to *M. linearifolium*, DC., but apparently quite distinct.

608. (1.) Loranthus *tetrandrus*, R. et P.—Hook. et Arn. *in Bot. of Beech. Voy. v.* 1. *p.* 25, (cum synon.)—Conception, *Messrs. Lay* and *Collie; Cuming* (*N.* 801.) El Valle del Rio Tingririca, in Chili, *Dr. Gillies.* Valparaiso, *Bridges.*—Nom. vern. *Quintral.*

609. (2.) Loranthus *aphyllus*, Miers.—L. cactorum, Hook. et Arn. *l. c.*—Coquimbo, *Messrs. Lay* and *Collie.* La Guardia del Maypu in Chili, and Villavicenzio in the Andes of Mendoza, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 259.)

610. (3.) Loranthus *Sternbergianus*, Schult.—L. glaucus, Gill. non R. P. nec Thunb.—Near La Guardia, Chili, *Dr. Gillies.* Aconcagua, *Bridges*, 1832 (*N.* 264.)

611. (4.) Loranthus *cuneifolius*, R. et P.—Valleys in the Andes of Mendoza, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 251.) On Acacia Cavenia, at Llayllay, *Bridges*, 1832, (*N.* 265.) Banda Oriental, upon willows, &c., *Tweedie.*

612. (5.) Loranthus (Oscill. Calanth. DC.) *Berteroi*, (Hook. et Arn.); glaber, ramis teretibus, foliis alternis late ellipticis obtusis basi in petiolum brevem attenuatis coriaceis margine subrevolutis, pedunculis termina-

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[*] *Calycis* tubus ovario adnatus, extus setis tribus longis plumosis, bracteisque tribus alternantibus cum fructu succrescentibus instructus: *limbus* minutus truncatus. *Fructus :* utriculus oblongus triqueter, calycis limbo persistente coronatus, indehiscens. *Semen* unicum : *Albumen* carnosum.

libus dense corymboso-racemiferis, pedunculis partialibus 2–5 floris, floribus tubulosis, laciniis 6 lineari-spathulatis subliberis, filamentis petala æquantibus, antheris lineari-oblongis oscillatoriis, stylo filiformi angulato stigmate vix capitato, germine subrotundo bracteam unilateralem rotundatam apice denticulatam superante.—L. venetus, Bert. non Kunth.—At Juan Fernandez, growing on *Myrtus Fernandezianus*, (H. et A.,) *Bertero.*—The partial peduncles are simple and bear two flowers, or are forked, and then bear three or five flowers, one of which is central, and in the axil of the fork. The flowers are about an inch long.—May this not be the genus *Struthenthus* of Martius?

613. (6.) Loranthus *heterophyllus*, R. et P. — Valparaiso, *Messrs. Lay* and *Collie; Cuming* (*N.* 951.)—The old branches are round and smooth; the younger ones are angled, glabrous, or sometimes roughish with minute rusty-coloured tubercles: petals 4–5, concave and dilated at the apex.

614. (7.) Loranthus *buxifolius*, Cham. et Schlecht.—L. Eschscholtzianus, Mart. in Schult. Syst.—Talcahuano, *Chamisso.* — This scarcely differs from *L. heterophyllus.* The young branches are certainly covered with short rigid hairs, but we can perceive no other character.

615. (8.) Loranthus *flagellaris*, Cham. et Schlecht.—Near La Punta de San Luis, at El Aguadita, and on the banks of El Rio Chorillo, *Dr. Gillies.*

616. (9.) Loranthus (Osc. Mier. DC.?—Struthanthus, *Mart.*) *Uraguensis* (Hook. et Arn.); glaber erectus? ramis teretibus, foliis alternis oblongo-lanceolatis apice mucrone cuspidatis basi in petiolum attenuatis, pedunculis 1-2 axillaribus folium subæquantibus supra medium furcatis, ramulis apice 3-bracteatis 3-floris, floribus sessilibus, petalis 6 linearibus subliberis, filamentis petalo brevioribus, antheris ovatis erectis, stigmate capitato, baccis ovoideis.—Uraguay, upon Laurels and Myrtles, *Tweedie; Baird.*—In many points this resembles the last species.

617. (1.) Sambucus *nigra*, Linn.—Buenos Ayres, *Dr. Gillies.* —Introduced?

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618. (1.) Manettia *cordifolia*. Martius.—M. glabra, Cham. et Schlecht.—Uraguay, *Tweedie.* Missions of Brazil, *Baird.*

619. (1.) Hedyotis *perpusilla*, (Hook. et Arn.); glabra, caule cæspitoso diffuso ramoso debili, foliis oblongis, stipulis minutis non setigeris, pedicellis terminalibus exque furcationibus ramorum unifloris folium subæquantibus, calycis tubo globoso setis hispido, dentibus erectis ovatis obtusis.—Occasionally found in inundated places, by the shores of La Plata near Buenos Ayres, *Tweedie.*—Stems about an inch or two inches long, branched; the branches furnished with several short lateral ramuli, from the axils of which springs a peduncule, which after flowering becomes reflexed. This is obviously very closely allied to *H. uniflora*, DC., but seems to differ from the genus by the stipules not being furnished with setæ.

620. (1.) Psychotria? *triflora*, (Hook. et Arn.); arbuscula, glabra, ramulis tetragonis, foliis lanceolatis in petiolum brevem attenuatis margine tenuissime reflexis integerrimis coriaceo-membranaceis, subtus pallidis reticulatis, stipulis ovatis acutis deciduis, pedunculis axillaribus brevibus trifloris, floribus brevissime pedicellatis basi bracteatis, bractea parva convoluta dentata, floribus dioicis, fructibus ovalibus calycis limbo breviter tubuloso minutissime 5-dentato coronatis.—Hippotis triflora, Bert. *in Ann. des Sc. Nat. v.* 21. *p.* 348, (non R. et P.)—Juan Fernandez, *Bertero* (*N.* 1466.); *Cuming* (*N.* 1337.) —Mr. Cuming's specimens bear only the male flowers; and what is very remarkable, the corolla, which is glabrous within, broadly infundibuliform and deciduous, on falling away, leaves the stamens attached to the receptacle within the minute calyx; nor is there any ru-

diment of a style: the anthers are exserted rather longer than the filaments, and tipped with a mucro. Mr. Bertero's specimens are fortunately in fruit; this, as well as that of the next species, is a drupaceous berry nearly half an inch long, enclosing two pyrena of a chartaceo-coriaceous texture, each of which contains a solitary seed. This is a shrub from 3 to 6 feet high.

621. (2.) Psychotria? *pyrifolia*, (Hook. et Arn.); arborea, glabra, ramulis obscure tetragonis, foliis late ovatis oblongisve longe petiolatis margine eroso-sinuatis tenuissime reflexis coriaceo-membranaceis subtus pallidioribus reticulatis, stipulis late ovatis acutis deciduis, pedunculis axillaribus trifloris, bracteis — ? fructu turbinato dentibus 5 erectis acuminatis coronato. — Hippotis pyrifolia, Bert. *mst.*—nom. vernac. Peralillo. Bert. *l. c.* —In the more elevated mountainous woods of Juan Fernandez, *Bertero.*—Of this Bertero remarks, " that it is perhaps only a variety of the former, but its trunk is four times as large, the leaves of the size of those of a pear-tree, undulated on their margin, and with a fruit perfectly turbinate." We certainly think it a very distinct species. Bertero did not meet with the flower; but if its structure prove to be the same as the other species, the two merit being raised to the rank of a genus.

622. (1.) Cephalanthus *Sarandi*, Cham. et Schlecht.—Buddleia glabrata, *Spr.*—Common on the coast of La Plata and Parana, *Tweedie.*

623. (1.) Bigelovia *verticillata*, Spr.—Borreria verticillata, *Meyer.*—Uraguay, *Tweedie.*

624. (2.) Bigelovia *eryngioides*, Hook. et Arn.—Borreria eryngioides, *Cham. et Schlecht.*—Buenos Ayres, *Tweedie.*

625. (1.) Mitrocarpum *Sellovianum*, Cham. et Schlecht.—Pampas of Buenos Ayres and Cordova, *Dr. Gillies.* Buenos Ayres, *Tweedie.*

626. (2.) Mitrocarpum *cuspidatum*, DeCand. *Prod. v.* 4. *p.* 572.—Maldonado in the Banda Oriental, *Dr. Gillies.*

## Cruckshanksia (Hook. et Arn.)

*Calycis tubus* globosus, subdidymus; *limbus* 4-dentatus, dentibus sæpe utrinque denticulo accessorio subulato instructis, 1 vel 2 sæpissime in alam subrotundam membranaceam reticulatam maximam pedunculatam expansis. *Corolla* hypocrateriformis, tubo elongato, limbo 5-fido laciniis patentibus, fauce glabra. *Stamina* 5, exserta, in orem corollæ inserta: *Filamenta* clavata, acuta: *Antheræ* lineari-oblongæ, basi affixæ. *Stylus* filiformis, corollæ tubo paullo longior: *Stigma* bifidum, pilosum, laciniis linearibus acutis. *Capsula* membranacea, globosa, subdidyma laciniis calycinis magis minusve ampliatis coronata, bilocularis, 4-valvis; loculis dispermis: valvis ovatis, valde concavis, cymbiformibus, medio 1-nervibus, a dissepimento tenuissimo membranaceo albido separabilibus. *Semina* majuscula, obovata, nigra, tuberculata, intus ad hilum valde exculpta. *Albumen* corneum. *Embryo* centralis valde curvatus; *cotyledones* planæ: *radicula* teretiuscula infera elongata.—*Tota* planta *magis minusve pubescens.* Radix *perennis, collo multiceps.* Caules *herbacei, teretes, adscendentes, flexuosi, ramosi.* Folia *obovato-lanceolata, acuta, in petiolum attenuata, stipulata;* stipulæ *interpetiolares, late subulatæ, discretæ, vel magis minusve coadunatæ.* Bracteæ *involucriformes, simplices vel tripartitæ, basi utrinque stipulis parvis subulato-dentatis instructæ.* Pedunculi *terminales axillaresque.* Flores *in cymam depressam majusculam dispositi, corollæ alæque calycinæ flavæ.*

627. (1.) C. *hymenodon* (Hook. et Arn.)—*α.* foliis incanis.—*β.* foliis minus pubescentibus.—*α.* Coquimbo, *Mr. Cruckshanks.*—*β.* Coquimbo, *Cuming* (*N.* 861, 875.)—Mr. Cuming's No. 861 appears at first sight to have an annual root; but is, we think, only a first year's growth. This most extraordinary plant has little of the general appearance of any of the *Rubiaceæ,* although in its most striking peculiarity, the dilatation of some of the calycine

teeth into disproportionably large orbicular or somewhat reniform petiolated wings, it has an affinity with *Mussænda.* Its place in *Rubiaceæ* is, however, near *Spermacoce* and *Mitracarpum.* The former *Cruckshanksia* figured in this work, (*vol.* 2. *tab.* 90.) having been ascertained to be the same with Balbisia, *Cav.**, or Ledocarpum, *Desf.*, we avail ourselves of this opportunity of dedicating the present plant to our much valued friend, its original discoverer.

628. (1.) Rubia *intricata* (Hook. et Arn.); glabra, læviuscula, caulibus diffusis herbaceis divaricato-ramosis intricatis acute 4-angulatis, foliis (parvis) oblongo-linearibus vix acutis subenervibus, paniculæ ramis divaricatis, floribus pedunculatis ebracteatis, baccis globosis.—Among hedges of Cactus, at San Isedro, *Tweedie.*

629. (2.) Rubia *Chilensis,* DeCand.—an Molina?—Valparaiso, *Cuming* (*cum N.* 405.)

630. (3.) Rubia *Relbun,* Cham. et Schl.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Mathews* (*N.* 190.); *Cuming* (*N.* 600.) Valparaiso and near Aconcagua, *Bridges,* 1832, (*N.* 368.); Buenos Ayres, *Tweedie;* and Chili, *Dr. Gillies.*

631. (4.) Rubia *Richardiana,* (Gill. *mst.*); glabra, lævissime scabra nitidula, caule erectiusculo tereti 4-angulato, foliis quaternis lineari-oblongis acutis uninerviis internodio subdimidio brevioribus, pedunculis oppositis verticillatisve folium æquantibus apice 4-bracteatis 3-floris, fructu (immaturo) tuberculato.—Magote Aspera, and Villavicenzio, Andes of Mendoza, *Dr. Gillies*—From one of these localities the plants are weaker and more procumbent, and their leaves smaller; but owing to the imperfect state of the specimens sent us, we can point out no marks of distinction.

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* We omitted to insert after *N.* 196. of this list, the Balbisia *peduncularis,* Don.—Ledocarpum pedunculare, *Lindl.*—It is Cuming's No. 886, from Coquimbo.

632. (5.) Rubia *Hænkeana*, (Gill. *mst.*); piloso-hirsuta, incana, caulibus procumbentibus teretibus, foliis 4-nis linearibus acutis deflexis uninerviis basi latioribus, pedunculis verticillatis folium duplo superantibus apice 4-bracteatis 3-floris, fructu tuberculato scabro.—Mendoza, *Dr. Gillies.*

633. (6.) Rubia *pusilla* (Gill. *mst.*); cæspitosa, procumbens, ramosa, glabra, nitidula, caulibus lævibus teretibus sulcatis, foliis quaternis oblongo-linearibus mucronatis margine læviusculis, pedunculis folium subæquantibus apice 4-bracteatis 3-floris, fructu (immaturo) minute tuberculato.—Province of San Luis, *Dr. Gillies.*—This has quite the appearance of some states of *Galium pumilum*, but belongs, as well as the above, to the genus *Rubia.*

634. (7.) Rubia *mucronata*, Hook. et Arn.—Galium mucronatum, R. et P.—G. Tarmense, Spr.—Hook. et Arn. *in Bot. of Beech. Voy.*—G. leucocarpum, DeCand.—Conception, *Messrs. Lay* and *Collie.*—As we have already stated (*Bot. of Beech. Voy.*), the specimens before us are so imperfect as not to allow of our referring them with any degree of certainty; there are to be seen, however, four bracteas under the flower, as in other Chilian *Rubias.*

635. (1.) Galium *suffruticosum*, (Hook. et Arn.); suffruticosum, hirsuto-pilosum, canescens, caulibus erectiusculis simpliciusculis teretibus, foliis oblongo-linearibus mucronatis nervo margineque recurvo præcipue pilosis, pedunculis alternis folio longioribus breviter divaricato-paniculatis, floribus minutis pedicellatis, fructibus glabris.—Vina de La Mar, near Valparaiso, *Bridges*, 1832, (*N.* 206.); *Cuming* (*N.* 405.)—The hairs forming the pubescence, point downwards.

636. (2.) Galium *Chamissonis*, (Hook. et Arn.); glaberrimum, perenne, caulibus erectiusculis acute tetragonis, angulis læviusculis, foliis deflexis oblongis acutis margine revolutis, paniculis axillaribus terminalibusque trifidis bi-

vel trichotomis, pedicellis divaricatissimis, fructu subrotundo setis compressis apice acutis non uncinatis hispido.—Valparaiso, *Bridges*, 1832, (*N.* 205.); *Mathews* (*N.* 282.); *Cuming* (*N.* 506.)—This approaches somewhat in habit to *Asperula galioides.* The branches of the panicle are so divaricated as to form a right angle with the branch that supports them, and they are even sometimes slightly recurved.

637. (3.) Galium *eriocarpum*, Bartl. *in DeCand. Prod. v.* 4. *p.* 600.—Cordillera of Chili, *Cuming* (*N.* 243.) Near La Guardia, Cordillera, *Bridges*, 1832, (*N.* 207.)

638. (4.) Galium *Gilliesii*, (Hook. et Arn.); perenne, caulibus herbaceis diffusis simpliciusculis acute 4-angulatis, foliis quaternis ovalibus obsolete uninerviis margine antrorsum spinulosis, pedunculis axillaribus terminalibusque folium æquantibus 3-floris, floribus pedicellatis, fructibus hispidissimis setis fructu longioribus apice non uncinatis.—*α.* caule foliisque glabris.—El Valle de las Caigas, Andes of Mendoza, *Dr. Gillies.* Cordillera of Chili, *Cuming* (*N.* 234.); *Bridges*, 1832, (*N.* 204.)—*β.* caule foliisque hirsuto-pilosis.—El Malpaso and Los Palomares, Andes of Mendoza, *Dr. Gillies.*—Until we received Cuming's specimens of the last species, we, as well as Dr. Gillies, considered that this might be *G. eriocarpum*, Bartl., from which, however, it differs, as also from *G. trichocarpum*, a closely allied Chilian species, if we may judge by DeCandolle's description of it.

639. (5.) Galium *cotinoides*, Cham. et Schlecht.—Conception, *Messrs. Lay* and *Collie.*

640. (1.) Astrephia *crispa*, Dufr.—Valeriana crispa, *R. et P.* —Valparaiso, *Mathews* (*N.* 164.); *Bridges.*

641. (2.) Astrephia *laxa*, Hook. et Arn.—Fedia laxa, Hook. et Arn. *in Bot. of Beech. Voy. p.* 28.—Conception, *Messrs. Lay* and *Collie.*

642. (3.) Astrephia *lobata*, (Hook. et Arn.); foliis pinnatilobatis, lobis distantibus grosse dentatis terminali late

ovato lateralibus oblongis multo minoribus, dentibus inferioribus deorsum superioribus sursum spectantibus, rachi glabra, corymbis pedunculatis oppositis distantibus in paniculam digestis, fructu glabro.—α. caule longe patentim piloso.—β. caule glabro.—Valparaiso, *Cuming* (*N.* 571,—α. in herb. Arn.—β. in herb. Hook.)—The stem below the last opposite pair of cauline leaves is hairy in our α.: above them it is glabrous, and as the corymbs and floral leaves there commence, we have considered that part as the rachis. The lobes of the leaf are usually two pair and a terminal one, which is much larger and broader than the others: the lower pairs are very narrow, the middle ones oblong,—all are toothed. The leaves increase in size, and the hairiness of the stem becomes more dense, towards the root.

643. (1.) Valeriana *salicariæfolia*, Vahl.—Buenos Ayres, *Tweedie.*

644. (2.) Valeriana *macrorhiza*, Poepp. *ex DeCand. Prod. v.* 4. *p.* 635.—Near the Baths of Villavicenzio and La Quebrada de San Isedro, Andes of Mendoza, *Dr. Gillies.*

645. (3.) Valeriana *hyalinorhiza*, R. et P.;—Hook. et Arn. *l. c. p.* 28.—Conception, *Messrs. Lay* and *Collie.* Valparaiso, *Cuming* (*N.* 743.); *Bridges*, 1832, (*N.* 463.)—We have already stated that the plant described under this name in Humboldt's works, and by DeCandolle in his *Prodromus*, is a distinct species: it may be called *V. Humboldtii*, Hook. et Arn.

646. (4.) Valeriana *crispa*, Hook. et Arn. *l. c. p.* 27. (non R. et P.).—Conception, *Messrs. Lay* and *Collie*; *Macrae.*

647. (5.) Valeriana *Bridgesii*, (Hook. et Arn.); glabra, foliis lyrato-pinnatifidis lobis erosis crispatis, lateralibus parvis terminali multum majore radicalibus obovatis integrioribus, panicula elongata ramis oppositis trichotomis distantibus, fructibus ovatis glabris.—Mountains and plains near Valparaiso, *Bridges*, 1832, (*N.* 462.); *Cuming* (*N.* 744.)—Very closely allied to our *V. crispa*, but with a totally distinct fruit; which, in this species,

is not flat on the one side, with a tubercle on the other, but presents a tubercle, which is internally spongy, on both sides; nor is it half so large as that of *V. crispa.* The leaves are not nearly so fleshy.

648. (6.) Valeriana *Papilla*, Bert. *in DeCand. Prod. v.* 4. *p.* 638.—Surra Campana de Quillota, *Bridges*, 1832, (*N.* 464.) Baths of Collina, *Macrae.*

649. (7.) Valeriana *polystachya*, Sm.—Moist places near Buenos Ayres, *Dr. Gillies ; Tweedie.*

650. (8.) Valeriana *glauca*, Poepp. *ex DeCand. l. c. p.* 639. —Cordillera of Chili, *Cuming* (*N.* 191.) Baths of Collina, *Macrae.* Los Ojos de Agua, *Bridges*, 1832, (*N.* 465.)

651. (1.) Betckea *samolifolia*, DeCand. *l. c. p.* 642.—Valparaiso, *Cuming* (*N.* 742.) Colmo, *Bridges*, 1832, (*N.* 466.) Conception, *Macrae.*

652. (2.) Betckea? *Gilliesii*, (Hook. et Arn.); glaberrima, radice cæspitosa lignosa, foliis radicalibus rotundato-ellipticis petiolo subtriplo brevioribus integerrimis, scapis folium subæquantibus, floribus capitato-congestis, fructu glabro lanceolato angulato, calycis limbo brevi urceolato.—B. samolifolia, Gill. (not DC.)—In clefts of rocks near La Casa de Piedro, Andes of Mendoza, forming dense masses, *Dr. Gillies.*—There is on the scape usually one pair of floral leaves, from the axils of each of which arises a head of flowers in addition to the terminal one; and these three heads are often so closely approximated as to appear but one. This plant does not perhaps belong to the genus *Betckea:* its fruit is not triquetrous, nor is the limb of the calyx 1-toothed and deciduous. Still, although the 1-celled fruit is far from mature, there is not the least appearance of the urceolus of the calyx being toothed, or becoming ultimately plumose, as in *Valeriana.* Viewing, then, *Betckea*, depending as a genus on its unilocular fruit, without any trace of abortive cells, and on the limb of the calyx not becoming pappose, we prefer uniting this species to it, to consti-

tuting for it a new genus, until more mature specimens in fruit shall be known.

653. (1.) Dipsacus *Fullonum*, Mill.—Cultivated places near Mendoza, *Dr. Gillies.*

## NOTICE RESPECTING MR. BERKELEY'S GLEANINGS OF BRITISH ALGÆ.

Much as has been done among the larger, and especially the marine Algæ, by the Botanists of our country, by Lightfoot, Goodenough and Woodward, Stackhouse, Turner, Wigg, Barr, Frankland, and, though last, yet not least, those ornaments of their sex, Mrs. Griffiths, Miss Hutchins, and Miss Hill; yet the more minute, but not less beautiful kinds have, till lately, been neglected, or only occasionally described in the works of Dillwyn, Smith, and Greville. What has farther been effected by Carmichael and Harvey will appear in the forthcoming volume on the Cryptogamia of the "*British Flora.*"

It is with pleasure we can announce another work, in which these objects are ably treated and accurately figured; the "*Gleanings of British Algæ*, by the *Rev. M. J. Berkeley;* being an Appendix to the Supplement to English Botany:"—and we confidently recommend it to the possessors of that valuable work, as a most important and necessary appendage. The first No. contains three plates, each representing two or three species, and sixteen pages of letter-press. The following are the species described, nearly the whole of which are new to Britain; *Chætophora pisiformis*, Ag. *C. Berkeleyi*, Grev. *C. pellita*, Lyngb. *Rivularia bullata*, Berk., (*Ulva bullata*, DeCand.) *R. Pisum*, Ag. *Sphæroplea crispa*, Berk. *S. punctalis*, Berk., (*Conferva punctalis*, Mull.) *Frustulia lanceolata*, Berk. *F. obtusa*, Ag. *Monema prostratum*, Berk. *Palmella Grevillei*, Berk., (*Palmella botryoides*, Grev. and Lyngb.)

The object of the work, and the difficulties Mr. Berkeley labours under in the execution of it, are best expressed in that gentleman's own words. "The drawings from which the present engravings have been executed, were prepared with a view to publication in the Supplement to Dr. Greville's Scottish *Cryptogamic Flora;* but in consequence of the discontinuance of that most excellent work, there was no prospect of making them known except by giving them in a separate form, which the author is now enabled to do, through the kindness and liberality of Mr. Sowerby. He is well aware that they must lose much of the interest and power of instruction they would have possessed, if accompanied by Dr. Greville's learned remarks, and illustrated by means of an extensive correspondence with the first continental Algologists, and a possession of authentic specimens of most of their published species; but he is unwilling that the opportunity should be lost of recording and figuring as British, some new and curious objects, in a field in which there are comparatively few labourers; though by reason of the difficulty of access to the several treatises scattered up and down in the many journals of the day, consequent on a country residence, he can make no pretensions to such a complete acquaintance with the most recent sources of information as would have enabled him with greater confidence to offer the present small contribution to the larger list of British Algæ.

"*Margate, July*, 1832."

## NOTICE RESPECTING THE ILLUSTRATIONS OF THE GENERA OF GERMAN PLANTS.

*Dr. and Professor Th. Fr. Lud. Nees von Esenbeck* has obligingly communicated to us the specimen of a work in which he is engaged, and which promises to be highly interesting to the friends of Europæan Botany, under the title of "*Genera Plantarum Floræ Germanicæ, iconibus et descriptionibus illustrata.*" Each plate, beautifully executed in lithography, in the best manner of the art, is accompanied with 2 pages of text, in Latin, including the name of the Class and Order, both Natural and artificial, a full description of the Genus, some remarks, and a reference to the figures. To give an idea of the satisfactory manner in which the subject is treated, we shall explain the figures in the two plates before us. One represents the Genus *Crocus*. *Fig.* 1, is a reduced figure of *Crocus vernus*, Allioni. *Fig.* 2, A Bulb of *Crocus Susianus*, Ait., with a part of the coat removed. *Fig.* 3, The same cut through transversely. *Fig.* 4, A Flower of *Crocus luteus*, Lam., the perianth cleft above so as to exhibit the stamens and stigmas. *Fig.* 5, The Stamens; *magnified. Fig.* 6, Pollen, do. *Fig.* 7, Stigmas, do. *Fig.* 8, Germen cut through transversely, with the ovules; *magnified. Fig.* 9, Young Fruit. *Fig.* 10, Mature Fruit, with the valves burst. *Fig.* 11, Single valve with a dissepiment; *slightly magnified. Fig.* 12, Seed. *Fig.* 13, The same; *magnified. Fig.* 14, The same cut through longitudinally, and exhibiting the Embryo.

The Genus *Cupressus* is still more elaborated and more interesting in its details. *Fig.* 1, exhibits a branch of *Cupressus sempervirens* with male and female flowers. *Fig.* 2, Male amentum; *magnified. Fig.* 3, Scale with the anthers, seen from above. *Fig.* 4, The same, seen on the underside. *Fig.* 5, Side view of the same; *magnified. Fig.* 6, Anthers, do. *Fig.* 7, Pollen, do. *Fig.* 8, Female amentum. *Fig.* 9, The same; *magnified. Fig.* 10, Germen (or receptacle) with the ovules (or cupules of authors), do. *Fig.* 11, Ovule, do. *Fig.* 12, Mature strobilus, with the carpels yet closed, do. *Fig.* 13, The same with the carpels opening as they become dry, do. *Fig.* 14, The same cut through longitudinally. *Fig.* 15, Carpels, side view. *Fig.* 16, The same; *more magnified. Fig.* 17, Seed. *Fig.* 18, The same; *magnified. Fig.* 19, The same cut through longitudinally, so as to exhibit the nucleus. *Fig.* 20, Nucleus, cut through longitudinally, and showing the Embryo.—This will suffice to prove the great pains that are taken with the dissections.

The work will be published in quickly succeeding Numbers, of an 8vo. size; each with 20 plates, and as many leaves of letter-press, at the price of one dollar. Two genera will, when very closely related, be given on one plate, in order not to increase the price unnecessarily. All the drawings will be made purposely from living plants, and as much as possible under the inspection of the Author. As far, too, as is consistent with the nature of the work, the genera of a natural family will be combined in the same number, so that the whole may be regularly arranged at its close.

# ACCOUNT OF INDIAN LABIATÆ, IN THE COLLECTION OF J. F. ROYLE, Esq. Director of the Hon. the E. I. C.'s Botanic Garden at Saharampur, &c. &c. &c.

By George Bentham, Esq.

## OCYMOIDEÆ. *Benth.*

1. Ocymum *Basilicum*, Linn.—Benth. Lab. Gen. et Sp. 4.
    - α. *pilosum*, Benth. l. c. — From Delhi, downwards along the banks of the Jumna.
    - β. *anisatum*, Benth. l. c.—Jungles near Saharampur, also commonly cultivated under the name of Toulsee.
    - ν. *purpurascens*, Benth. l. c.—From Cashmere, apparently cultivated.
    - ι. *thyrsiflorum*, Benth. l. c.—Cultivated.

2. O. *gratissimum*, Linn.—Benth. Lab. Gen. et Sp. 7.—Cultivated under the name of Toulsee.

3. O. *sanctum*, Linn.—Benth. Lab. Gen. et Sp.—Fields and gardens about Allahabad, and along the Jumna.

4. Geniosporum *strobiliferum*, Wall.—Benth. Lab. Gen. et Sp. 20.—Himalayan range.

5. Orthosiphon *rubicundus*, Benth. Lab. Gen. et. Sp. 26. var. fere glaber.—Kheeree pass, entrance into Deyra Doon.

6. Orthosiphon *pallidus*, (Royle); glaber vel tenuissime pubescens, caule adscendente, foliis petiolatis ovatis obtuse et grosse subinciso-dentatis basi integerrimis cuneatis et in peti-

olum decurrentibus, corollæ parvæ tubo calycem subæquante fauce subæquali, staminibus corolla brevioribus.—Banks of the Jumna.—A small plant, nearly allied to *O. tomentosus*, from which it differs chiefly in its very small flowers, the corolla being scarcely longer than the calyx. The leaves are pale-coloured and thickish. During maturation the calyx increases considerably in size, so as, at length, to become like that of *O. rubicundus*.

7. Plectranthus *cordifolius*, Don.—Benth. Lab. Gen. et Sp. 35.—Himalayan range.

8. P. *striatus*, Benth. Lab. Gen. et Sp. 41. var. *humilior*.—Mussooree in the Himalayan range.

9. P. *Gerardianus*, Benth. Lab. Gen. et Sp. 42. tota glabra.—Sansedarra and Deyra Doon.

10. P. *Coetsa*, Don.—Benth. Lab. Gen. et Sp. 42.—Mussooree and hills towards Cashmere.

11. P. *rugosus*, Wall.—Benth. Lab. Gen. et Sp. 43.—Common in the Himalayan range.

12. P. *ternifolius*, Don.—Benth. Lab. Gen. et Sp. 44.—Valley of Rama Serai in the Himalaya.

13. Coleus *barbatus*, Benth. Lab. Gen. et Sp. 49.—Kedarkonta in Gurwhall.

14. Anisochilus *carnosus*, Wall.—Benth. Lab. Gen. et Sp. 59.—Plains from Delhi to Allahabad.

### MENTHOIDEÆ. *Benth.*

15. Pogostemon *plectranthoides*, Desf.—Benth. in Wall. Pl. As. Rar. 1. 31.—Kheeree Pass.

16. Dysophylla *quadrifolia*, Benth. in Wall. Pl. As. Rar. 1. 30.—Calcutta.

17. D. *verticillata*, Benth. in Wall. Pl. As. Rar. 1. 30.—Rogonantpur, Bengal.—Both the above species grow in ponds and watery ditches. The long floating stems produce roots only under water; and, above water, upright, branching and leafy shoots, from a foot to a foot and a half high.

18. Aphanochilus *flavus*, Benth. in Wall. Pl. As. Rar. 1. 29.—Kedarkonta.

19. A. *polystachyus*, Benth. in Wall. l. c.—Mussooree.

20. A. *incisus*, Benth. in Wall. Cat. Herb. Ind. *N.* 1552. —A. fœtens, Benth. in Wall. Pl. As. Rar. 1. 29.—Khalsee in Deyra Doon.—I have now preferred the name of *incisus* to that of *fœtens*, which I had formerly adopted, as the latter is not always applicable. This plant is the *Hyptis stachyodes*, Link, Enum. Hort. Berol.

21. Cyclostegia *strobilifera*, Benth. in Wall. l. c. 1. 30.—Kedarkonta.

22. Elsholtzia *cristata*, Wall.—Benth. in Wall. l. c. 1. 29. —Shalma, and on the road to Cashmere.

23. Perilla *ocymoides*, Linn.—Benth. in Wall. l. c. 1. 29.—Mussooree and Surcunda.—Oil is extracted from its seeds.

24. Colebrookia *oppositifolia*, Wall.—Benth. in Wall. l. c. 1. 29.—Deyra Doon.

25. Mentha *sylvestris*, Linn.—Cashmere.

26. M. *viridis*, Linn.—M. *Pudina*, Hamilt.—Benth. in Wall. l. c.—Cultivated at Saharampur. Cashmere, but probably there also cultivated.

27. M. *Royleana*, Wall.—Benth. in Wall. l. c. 1. 29.—Himalayan range below Mussooree.

28. M. *arvensis*, Linn. *v.* *glabrescens*, Benth. Lab. Gen. et Sp. ined.—Banks of the Cashmere river.

29. Lycopus *exaltatus*, Linn.—Choor and Kedarkonta.

30. Meriandra *Benghalensis*, Benth. in Wall. l. c. 1. 29.—Commonly cultivated in gardens.

31. M. *strobilifera*, Benth. in Wall. l. c. 1. 29.—At Syen and below Simlah in the Himalayan range.

### MONARDEÆ. *Benth.*

32. Salvia (Drymosphace *) *nubicola*, Wall.—Benth. in Wall. Pl. As. Rar. 1. 68.—Kedarkonta and Cashmere.

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* The following are the sections of this numerous genus, as extracted from my manuscript monograph, prepared for the forthcoming part of my *Labiatarum Genera et Species*.

1. EUSPHACE. *Calyx* campanulatus, labio superiore tridentato, dentibus omnibus acutis maturatione vix auctis. *Corollæ tubus* amplus, subexsertus, intus annulo pilorum notatus. *Labium superius* erectum, *inferioris* lobi laterales reflexo-patentes. *Connectiva* postice porrecta, loculam difformem cassam vel varius sub-

33. S. (Drymosphace) *hians*, (Royle); caule herbaceo erecto villoso, foliis longe petiolatis late ovatis basi late cordato-sagittatis, floralibus ovatis acuminatis calyce brevioribus, ra-

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polliniferam ferentia, extremitate subconnexa.—The monograph contains 14 species from the Mediterranean region of Europe, Africa, and Asia: *S. officinalis*, *pinnata*, *scabiosæfolia*, &c.

2. Hymenosphace. *Calyx* campanulatus, labio superiore 2–3-fido, dentibus omnibus subæqualibus, post anthesin membranaceo-dilatatis, venosis. *Corollæ tubus* amplus, intus annulatus. *Labium superius* subfalcatum, *inferioris* lobi laterales patentes. *Connectiva* postice porrecta, loculam difformem cassam ferentia, extremitate subconnexa.—12 species from the Mediterranean region, the Canary islands, and the Cape: *S. pomifera*, *Canariensis*, *aurea*, *paniculata*, &c.

3. Drymosphace. *Calyx* tubuloso-campanulatus, labio superiore truncato, subintegro vel brevissime tridentato. *Corollæ tubus* exsertus, intus annulatus, *labio superiore* falcato compresso, *inferioris* lobis lateralibus patentibus. *Connectiva* postice porrecta, loculam difformem cassam ferentia, vix connexa.—4 species: *S. glutinosa* from Europe, and the other three from India.

4. Horminum. *Calyx* tubulosus, labio superiore truncato, tridentato. *Corollæ tubus* subfauce ampliatus vel ventricosus intus exannulatus; *labium superius* concavum vel falcatum, *inferioris* lobi laterales oblongi, erecti, subtorti. *Connectiva* postice deflexa, abrupte dilatata, extremitate calloso connexa.—4 species, from the Mediterranean, the Levant, and Persia: *S. Indica*, *Forskölii*, *Horminum* and *viridis*. The two first form perhaps a distinct section.

5. Æthyopys. *Calyx* campanulatus vel tubulosus, labio superiore tridentato, dentibus erectis, medio sæpe minimo. *Corollæ tubus* sub fauce ampliatus vel ventricosus intus annulatus. *Labium superius* falcatum, compressum, *inferioris* lobi laterales oblongi, erecti, subtorti. *Connectiva* postice deflexa, abrupte dilatata, extremitate calloso connexa.—Panicula *divaricato-ramosa*.—16 species, from the Mediterranean region, Persia, and India: *S. Sclarea*, *Æthyopys*, *argentea*, *lanata*, &c.

6. Plethiosphace. *Calyx* campanulatus, supra concavo-bisulcatus, dentibus tribus minimis conniventibus. *Corollæ tubus* sub fauce ampliatus vel ventricosus, intus exannulatus; *labium superius* falcatum, compressum, *inferioris* lobi laterales oblongi, erecti, subtorti. *Connectiva* postice deflexa, abrupte dilatata, extremitate calloso connexa.—Racemi *simplices vel virgato-ramosi*.—About 25 species; European, North African, and Siberian: some of them very common, both wild and in gardens, and exceedingly variable. Hence has arisen an almost inextricable confusion in their synonymy. *S. pratensis*, *Verbenaca*, *sylvestris*, *virgata*, &c. belong to this section.

7. Calosphace. *Calyx* ovatus, tubulosus vel campanulatus, labio superiore integro vel rarius tridentato. *Corollæ tubus* inclusus, vel exsertus, intus exannulatus; *labium superius* rectum, concavum, *inferioris* lobi laterales patentes. *Connectiva* postice deflexa, linearia, longitudinaliter connata. *Styli* lobus inferior subu-

cemis subramosis verticillastris sexfloris, calycis campanulati striati colorati labio superiore integro truncato, inferioris longioris, dentibus ovatis acutis corollis calyce triplo longioribus,

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latus.—146 species; all American, distributed into 9 groupes: Tubifloræ, Calycinæ, Axillifloræ, Bifloræ, Erianthæ, Polystachyæ, Bracteatæ, Brachyanthæ, and Micranthæ.

8. Microsphace. *Calyx* ovatus, labio superiore integro. *Corolla* minima tubo incluso, intus exannulato, *labio superiore* recto, *inferioris* lobis lateralibus patentibus.—*Connectiva* postice deflexa, linearia, longitudinaliter connata. *Styli* lobus inferior complanato-dilatatus, rotundatus.—2 or 3 American species: *S. occidentalis, procumbens*, and *misella*.

9. Notiosphace. *Calyx* ovatus, labio superiore integro. *Corolla* minima, tubo incluso, intus annulato?; *labio superiore* brevissimo, truncato, *inferioris* lobis lateralibus patentibus. *Connectiva* medio affixa, postice remota porrecta, loculam subconformem fertilem ferentia.—1 species, *S. plebeia*, from India and tropical Australia.

10. Heterosphace. *Calyx* tubulosus, labio superiore truncato, tridentato. *Corollæ tubus* intus annulatus, *labium superius* breve rectum, *inferioris* lobi laterales patentes. *Connectiva* medio affixa, postice remota, porrecta, loculam subconformem minorem subfertilem ferentia.—14 species; viz. 3 North American (*S. lyrata*, &c.), 1 North African (*S. Nilotica*), 8 from the Cape (*S. runcinata*, &c.), 1 Indian (*S. ocymoides*), and 1 Japanese (*S. Japonica*).

11. Gymnosphace. *Calyx* tubulosus, labio superiore integro, recurvo. *Corollæ tubus* brevis, amplus, intus annulatus? *labia* brevia, *superius* erectum, *inferioris* lobi laterales patentes. *Connectiva* postice remota, deflexa, filiformia, acuta, filamentis erectis cum connectivo subcontinuis.—A single species, *S. saxicola*, from India.

12. Hemisphace. *Calyx* tubulosus, labio superiore truncato, tridentato. *Corollæ tubus* intus annulatus; *labium superius* erecto-patens, *inferioris* lobi laterales patentes. *Connectiva* postice brevissima, remota, deflexa, acuta, dentiformia, filamentis erectis cum connectivo subcontinuis.—3 species; *S. verticillata* from South and Eastern Europe, and two others from the Levant.

The above characters may be contrasted together by the following Synopsis:—

*Connectiva* postice connexa, connata vel approximata.

*Connectiva* postice porrecta, subantherifera. *Corollæ tubus* annulatus, labii inferioris lobi laterales patentes.

| *Calyx* subæqualiter 4–5-dentatus. | | | *Species.* |
|---|---|---|---|
| *Calycis fructiferi* dentes acuti vix aucti, | *Sect.* 1. | Eusphace, | 14 |
| *Calycis fructiferi* dentes membranaceo-dilatati, venosi,........................ | *Sect.* 2. | Hymenosphace, | 12 |
| *Calycis* labium superius truncatum subtridentatum inferius bifidum, ......... | *Sect.* 3. | Drymosphace, | 4 |
| | | | 30 |

tubo exserto, fauce ampliato limbo hiante, labio superiore falcato compresso, inferiore lato patente.—Cashmere.—A handsome species, differing from *S. glutinosa* by its shorter and branching racemes, campanulate calyces, and larger blue flowers.

34. S. (Æthyopys) *Moorcroftiana*, Wall.—Benth. in Wall. l. c. 1. 67.—Cashmere, Kanaour, Kedarkonta.

35. S. (Æthyopys) *lanata*, Roxb.—Benth. in Wall. l. c. 1. 67.—Mussooree; common in the Himalayan range.

36. S. (Plethiosphace) *dumetorum*, Andrz.—Ledeb. Fl. Alt. 1. 24.—Cashmere.

37. S. (Notiosphace) *plebeia*, Br.—Benth. in Wall. l. c. 1. 67.—Deyra Doon, and along the Jumna; common.

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| | | | *Species.* |
|---|---|---|---|
| Brought over, ........................................ | | | 30 |
| *Connectiva* postice deflexa. *Corollæ tubus* exannulatus. | | | |
| *Connectiva* postice abrupte dilatata, extremitate calloso connexa. *Corollæ* labii inferioris lobi laterales erecti obliqui subtorti. | | | |
| *Calyx* tubulosus, labio superiore truncato tridentato, ........................ | *Sect.* 4. | Horminum, | 4 |
| *Calyx* campanulatus, labio superiore tridentato, dente medio breviore.—Panicula *divaricato-ramosa*, ............... | *Sect.* 5. | Æthyopys, | 16 |
| *Calyx* ovatus, labii superioris dentibus 3 minimis conniventibus.—Racemi *simplices vel virgato-ramosi*, .................. | *Sect.* 6. | Plethiosphace, | 25 |
| *Connectiva* postice linearia, longitudinaliter connata. *Corollæ* labii inferioris lobi laterales patentes. | | | |
| *Styli* lobus inferior subulatus, ............ | *Sect.* 7. | Calosphace, | 146 |
| *Styli* lobus inferior complanato-dilatatus rotundatus, ............................ | *Sect.* 8. | Microsphace, | 2 |
| *Connectiva* postice remota. | | | |
| *Connectiva* postice porrecta antherifera. | | | |
| *Calycis* labium superius integrum, ...... | *Sect.* 9. | Notiosphace, | 1 |
| *Calycis* labium superius tridentatum, ... | *Sect.* 10. | Heterosphace, | 14 |
| *Connectiva* postice deflexa acuta subulata. | | | |
| *Calycis* labium superius integrum, ...... | *Sect.* 11. | Gymnosphace, | 1 |
| *Calycis* labium superius tridentatum, ... | *Sect.* 12. | Hemisphace, | 3 |
| | | | 242 |

### SATUREINEÆ. *Benth.*

38. Satureia *hortensis*, Linn.—Cultivated in gardens.

39. Micromeria *biflora*, Benth. Lab. Gen. et Sp. MSS. Thymus biflorus. Hamilt.—Benth. in Wall. Pl. As. Rar. 1. 31.—Hills, Mussooree.

40. Thymus *Serpyllum*, Linn.—Hills at Choor, Simlah, Pire Punjal.

41. Origanum *Majorana*, Linn. (O. *Wallichianum*, Benth. in Wall. Pl. As. Rar. 1. 31. is probably the same.)—Cultivated in gardens.

42. O. *normale*, Don.—Benth. in Wall. l. c. 1. 31.—Common in the Himalayan range.

43. O. *vulgare*, Linn.—Pire Punjal (a mountain over which the road leads into the valley of Cashmere).

44. O. *laxiflorum*, (Royle); caule procumbente villoso, foliis breviter petiolatis lato-ovatis obtusis subintegerrimis basi rotundatis utrinque viridibus pubescentibus, floralibus caulinis similibus parvis acutis calyce longioribus, verticillastris bifloris laxe spicatis, calycis campanulati dentibus brevibus æqualibus.—Nagkanda in the Himalayan range.—Leaves as in O. *vulgare;* flowers smaller even than in *O. parviflorum* and *glandulosum;* distinct from all by the laxity of its spikelets, which are not imbricated as in all the other species; and in this respect this plant is intermediate between *Origanum* and *Micromeria.*

### NEPETEÆ. *Benth.*

45. Clinopodium *repens*, Roxb.—Benth. in Wall. Pl. As. Rar. 1. 66.—Common in the Himalayan range.

46. Melissa *Napalensis*, Benth. in Wall. l. c. 1. 66.—Cashmere and Deyra Doon.

47. M. *parviflora*, Benth. in Wall. l. c. 1. 65.—Deyra Doon.—The plant which, from a very bad specimen, I had described as *Geniosporum axillare*, in the second volume of Dr. Wallich's *Plantæ Asiaticæ Rariores*, belongs to this species.

48. Prunella *vulgaris*, Linn.—Benth. in Wall. l. c. 1. 66. —Common in the whole range, Cashmere, Kanaour, Kedarkonta, Choor, &c.

49. Scutellaria *orientalis*, Linn.—Kanaour.—The *S. Sieversii*, Ledeb. Fl. Alt. 2. 394. does not appear to me distinct from this.

50. S. *linearis*, Benth. in Wall. Pl. As. Rar. 1. 66.—Common in the Himalayan range.

51. S. *grossa*, Benth. in Wall. l. c. 1. 67.—Syen range, in Sirmore, a district of the Himalaya.

52. S. *rivularis*, Wall.—Benth. in Wall. l. c. 1. 66.—Cashmere.

53. S. *scandens*, Don, Prod. Fl. Nep.—*S. angulosa*, Benth. in Wall. l. c. 1. 67.—Common at Mussooree and in the Himalayan range.

54. S. *cana*, Wall.—Benth. in Wall. l. c. 1. 66.—Mussooree and Syen range.

55. Marmoritis* *rotundifolia*, (Benth.); foliis petiolatis reniformibus crenatis rugosis utrinque tomentoso-lanatis, calycibus tomentoso-pubescentibus.—Kanaour.—A small plant, having much the habit of the cut-leaved *Dracocephali*, and in some measure that of *Lamium amplexicaule*. The flowers are in axillary verticillastri, shorter than the petioles of the leaves. The corolla is shorter than the teeth of the calyx.

56. Nepeta *linearis*, (Royle); caulibus adscendentibus glabriusculis, foliis sessilibus linearibus acutiusculis integerrimis basi angustatis utrinque viridibus glabris, spica ovata pauciflora, bracteis lanceolato-subulatis, calycis elongati dentibus lan-

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* Marmoritis, *Benth.* *Calyx* 13–15-nervius, infundibuliformi-campanulatus, profunde quinquedentatus, dentibus æqualibus, acutis. *Corollæ tubo* calyce breviore, *labio superiore* erecto, bifido, plano, *inferioris* lobis lateralibus erectis, medio patente subcrenulato. *Stamina* 4, adscendentia, didynama, inferioribus brevioribus. *Antheræ* biloculares, nudæ, loculis subparallelis. *Stylus* breviter bifidus, lobis subæqualibus, subulatis. *Stigmata* minuta, terminalia. *Achenia* sicca, lævia, nuda.

*Marmoritis*, *Nepeta* (including *Glechoma*) and *Dracocephalum*, form a small groupe in the tribe of *Nepeteæ*, distinguished by the upper stamina being the longest instead of the shortest, as they are in most Labiatæ; a distinction first pointed out to me by Professor Agardh, in 1830.

ceolatis tubo brevioribus.—Himalayan range at Sabatko, and towards Cashmere.

57. N. *connata*, (Royle); caule erecto villoso, foliis sessilibus lanceolatis acutis integerrimis basi cordato-amplexicaulibus subconnatis utrinque viridibus glabris, spica oblonga densa vel basi subinterrupta, bracteis lanceolato-subulatis ciliatis calycem æquantibus, dentibus calycinis subulatis tubo longioribus.—Cashmere.—A beautiful species.

58. N. *elliptica*, (Royle); caule erecto villoso, foliis sessilibus oblongis obtusis argute dentatis basi cordatis utrinque viridibus, superioribus acutis, spica basi interrupta, foliis floralibus bracteisque ovato-lanceolatis acutissimis ciliatis calyce longioribus, dentibus calycinis subulatis tubo longioribus.—Syen range, Himalaya.—Remarkable for the elegant and regular teeth of the leaves.

59. N. *polystachya*, (Royle); caule erecto tenuiter pubescente ramoso, foliis parvis sessilibus oblongis obtusis crenatis basi cordatis utrinque viridibus glabris, spicis basi interruptis, foliis floralibus lato-ovatis bracteisque ovato-lanceolatis acutis calyce subbrevioribus, dentibus calycinis subulatis tubo subæqualibus.—Cashmere.—Allied to the last, but more glabrous and branched; leaves smaller; spikelets longer and more slender; bracteas and floral leaves shorter.

60. N. *nervosa*, (Royle); glabra, caule humili erecto ramoso, foliis brevissime petiolatis lanceolatis acutis serratis basi rotundatis utrinque viridibus, spica oblonga densa, bracteis exterioribus ovatis acutissimis ciliatis calyce longioribus, dentibus calycinis longe subulatis tubo subæqualibus.—Cashmere.

61. N. *spicata*, Benth. in Wall. Pl. As. Rar. 1. 64.—Common in the Himalayan range; Mussooree; Cashmere.

62. N. *discolor*, (Royle); caule adscendente basi villoso, foliis petiolatis ovatis obtusis crenatis basi subcordatis supra viridibus subtus incanis, spica oblonga densa vel basi subinterrupta, bracteis oblongo-linearibus acutissimis calycem æquantibus, calycis glabriusculi dentibus subulatis tubum æquantibus.—Syen range and Mussooree.

63. N. *elata*, (Royle); caule erecto glabro, foliis petiolatis

oblongo-ovatis obtusis crenatis basi late cordatis utrinque viridibus glabris, spicis oblongo-cylindricis subinterruptis, bracteis lanceolato-subulatis calyce subbrevioribus, calycis glabriusculi dentibus subulatis tubum æquantibus.—Cashmere.

64. N. *distans*, (Royle); erecta elata, caule basi villoso, foliis petiolatis ovato-lanceolatis obtusis crenatis basi profunde cordatis rugosis subtus villosis, verticillastris densis inferioribus remotis supremis approximatis, bracteis lineari-lanceolatis calycem subæquantibus, calycis elongati incurvi ore obliquo, dentibus superioribus lanceolatis inferioribus subulatis omnibus subulato-acuminatis, corollis calyce subduplo longioribus. —Syen range and Mussooree.

65. N. *ciliaris*, Benth. in Wall. Pl. As. Rar. 1. 64.—Mussooree and road to Cashmere.

66. N. *clinopodioides*, (Royle); adscendens tenuiter pubescens, foliis petiolatis ovatis obtusis crenatis basi late subcordatis utrinque viridibus tenuiter pubescentibus, racemis subsimplicibus, verticillastris laxiusculis multifloris subsecundis, bracteis subulatis calyce subbrevioribus, calycis tubulosi pubescentis ore obliquo, dentibus superioribus lanceolatis inferioribus subulatis, corollis calycem vix excedentibus.—Banks of the Jumna.—Allied to *N. ruderalis*, but differs chiefly by its small slender calyces and short corolla, as well as in its habit.

67. N. *ruderalis*, Hamilt.—Benth. in Wall. Pl. As. Rar. 1. 64.—Deyra Doon and banks of the Jumna.—Perhaps several species may be included under this name, but my specimens are not sufficient to distinguish them.

68. N. *salviæfolia*, (Royle); erecta cano-tomentosa, foliis petiolatis ovatis vel ovato-lanceolatis obtusis crenulatis basi rotundatis rugosis utrinque molliter tomentosis supra canescentibus subtus albis, racemis laxis subsimplicibus, cymis pedunculatis elongatis, bracteis brevissimis, calycibus oblongis erectis subrectis pubescentibus ore obliquo, dentibus lanceolatis superioribus majoribus, corollis calyce subtriplo longioribus.—Cashmere.

69. N. *graciliflora*, Benth. in Wall. Pl. As. Rar. 1. 65.—Deyra Doon.

70. Dracocephalum *Royleanum*, Benth. in Wall. Pl. As. Rar. 1. 65.—Kanaour.—Cultivated at Saharampur under the name of *Balungoo.*

71. D. *Govanianum*, Benth. in Wall. l. c. 1. 65.—Kedarkonta and road to Cashmere.

72. D. *Sibiricum*, Linn.—Kanaour and road to Cashmere.

73. D. *erectum*, (Royle); caule erecto pubescente, foliis petiolatis ovato-lanceolatis obtusis crenatis rugosis basi cordatis subtus subcanescentibus, verticillastris laxe racemosis, cymis utrinque pedunculatis, bracteis brevissimis, calycibus elongatis ore obliquo, dentibus superioribus latioribus, corollis calyce plus duplo longioribus.—Kanaour.—It differs from *D. Sibiricum* by its rugose leaves, whitish on the under side, and by its flowers, which are rather smaller.*

74. Craniotome *versicolor*, Reichenb.—Benth. in Wall. l. c. 1. 64.—Mussooree.

75. Holmskioldia *sanguinea*, Retz.—Benth. in Wall. l. c. 1. 65.—Deyra Doon.

76. Erianthera *rhomboidea*, Benth.†—*Caulis* humilis, simplex, adscendens, tomentoso-villosus. *Folia caulina* parva, pauca, *floralia* densa, petiolata, rhomboidea, *infima* subintegerrima, *superiora* profunde crenata, omnia obtusissima, basi cuneata, rugosa, utrinque lanato-villosa. *Verticillastri*

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* The *D. Govanianun*, *Sibiricum*, and *erectum* ought, perhaps, to be referred to *Nepeta*, a genus scarcely distinct from *Dracocephalum.* The *D. Royleanum* resembles a good deal the *Zizyphoræ* in habit, and might, probably, constitute a distinct genus.

† ERIANTHERA.—Benth. *Calyx* tubuloso-campanulatus, subæqualis, profunde 5-dentatus. *Corolla* tubo amplo exserto intus nudo, limbo bilabiato, *labio superiore* emarginato, subfornicato, *inferiore* patente trilobo, lobo medio maximo bifido. *Stamina* 4, adscendentia, didynama, inferioribus eminentibus. *Antheræ* per paria approximatæ, lanatæ, biloculares, loculis divaricatis. *Stylus* apice æqualiter bifidus, lobis subulatis apice stigmatiferis.—I have not seen the ripe *achenia*, but the young ones have a fleshy appearance. This genus is allied to *Lamium*, *Phlomis*, *Moluccella*, and *Gomphostemma*, but does not exactly agree with the characters of any. In habit it resembles *Eriophyton*, but the corolla and stamens are very different.

2–6-flori. *Bracteæ* subulatæ, molliter lanatæ, calycem æquantes. *Calyx* sessilis, semipollicaris, molliter villosus, post anthesin parum auctus, dentibus lanceolato-linearibus, nunc usque ad apicem mollibus villosis, nunc spina glabra terminatis. *Corolla* fere sesquipollicaris, extus pubescens.—Kanaour.

77. Lamium *amplexicaule*, Linn.—Benth. in Wall. l. c. l. 63.—Choor mountain and Kanaour.

78. L. *petiolatum*, (Royle); foliis caulinis longe petiolatis floralibus subsessilibus omnibus ovato-lanceolatis acuminatis duplicato-serratis basi rotundatis hispidulis, verticillastris multifloris, bracteis lineari-subulatis calyce brevioribus, dentibus calycinis basi lanceolatis longe subulato-acuminatis molliter hispidis, corollæ tubo vix exserto tenui labio superiore elongato integro inferiore abbreviato.—Common in the Himalayan range.—Allied to *L. album*; but the leaves are different in shape, the flowers are smaller, and the teeth of the calyx much longer, and are thickly clothed with soft hairs.

79. Stachys *sericea*, Wall.—Benth. in Wall. l. c. l. 64.—Mussooree, and common in the Himalayan range.

80. S. *splendens*, Wall.—Benth. in Wall. l. c. l. 64.—Mussooree; common in the Himalayan range.

81. Leonurus *pubescens*, Benth. in Wall. l. c. l. 63.—Choor mountain and Kanaour.

82. L. *Sibiricus*, Linn.—Benth. in Wall. l. c. l. 63.—Deyra Doon.

83. Marrubium *catariæfolium*, Lam.—Cashmere.

84. Roylea *elegans*, Wall. Pl. As. Rar. 1. 57. t. 74.—Syen range and Jounsar in the Himalaya.

85. Eremostachys *superba* *, (Royle); foliis infimis maximis

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* This plant is certainly of the same genus as *Phlomis laciniata*, Linn. or *Eremostachys laciniata*, Ledeb. Fl. Alt. 415.; and both may be considered as generically distinct from *Phlomis* as well as from *Moluccella*, but the *E. moluccelloides*, Ledeb. l. c. appears to me to be inseparable from *Moluccella lævis*, which I should consider as the type of the latter genus. The character *calyx corolla amplior*, which has been hitherto considered as distinctive of *Moluccella*, is, like the *Stamina longissima* of Trichostema, the *Antheræ cruciatæ* of Glechoma, the *Corolla faux inflata* of Dracocephalum; characters which are all equally applicable to nearly half the genera of *Labiatæ*, and it is impossible to form any natural arrangement of

pinnatisectis segmentis 1–4-jugis inferioribus petiolulatis ultimo longissimo omnibus latis grosse crenato-lobatis utrinque viridibus, floralibus bracteæformibus ovatis acutis subintegerrimis.—Kheeree Pass.—Inflorescence and flowers nearly the same as in *E. laciniata;* but the spikes longer and thinner, and floral leaves entire. Lower leaves of the stem or radical leaves a foot and a half long, with two or three pair of broad, ovate, petiolulate segments, and a terminal oblong one, at least ten inches long.

86. Phlomis *Cashmeriana*, (Royle); herbacea? erecta, caule dense floccoso-tomentoso, foliis petiolatis ovato-lanceolatis obtusis crenatis basi lato-rotundatis molliter rugosis supra pubescentibus villosisve subtus dense albo-tomentosis, bracteis subulatis ciliatis rigidis calyce longioribus, calycis floccoso-lanati dentibus subulatis rigidis patentibus pilosis.—Cashmere.—A handsome species, allied to *P. herba venti* and *pungens*, but with much larger flowers and leaves, and thickly clothed with a white cotton.

87. P. *cordata*, (Royle); herbacea humilis erecta subsimplex, caule obverse piloso, foliis longe petiolatis ovato-subrotundis obtusis crenatis basi cordatis rugosis utrinque dense sericeo-villosis, floralibus oblongo-lanceolatis, bracteis lineari-subulatis calyce subbrevioribus villosis, calycis villosuli dentibus subrotundis breviter subulato-acuminatis, corollæ galea pilosissima.—Kanaour.

88. P. *simplex*, (Royle); herbacea humilis erecta subsimplex, caule obverse piloso, foliis petiolatis lato-ovatis obtusis crenatis basi cordatis rugosis utrinque viridibus villosis, floralibus oblongis, bracteis lineari-lanceolatis ciliatis calycem æquantibus, calycis membranacei subcolorati apice ciliati dentibus truncatis longe subulato-acuminatis, corollæ galea pilosissima.—Kanaour and Pire Punjal.

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the tribe without distributing the *Moluccella* of authors into various other genera. Thus the *M. frutescens* is a *Leucas*, as also probably the *M. Persica;* the *M. spinosa* is Presl's *Chasmonia. M. marrubiastrum*, Steph. (Lebed. Fl. Alt. 2. 417.) is a *Marrubium*, very near to *Marrubium Alyssum. Moluccella grandiflora*, Steph. (Ledeb. l. c. 418.) is probably a second species of *Erianthera.*

89. P. *lamiifolia,* (Royle); herbacea humilis erecta villosa, procumbens, foliis breviter petiolatis ovatis obtusis crenatis basi cordatis rugosis utrinque viridibus villosis, floralibus oblongo-lanceolatis, bracteis subulatis calycibusque hirsutis, dentibus calycinis truncatis breviter subulato-acuminatis, corollæ galea pilosissima.—Mussooree.

90. P. *latifolia,* (Royle); herbacea humilis erecta subsimplex, caule obverse piloso, foliis petiolatis late deltoideis acutis crenatis basi profunde cordatis rugosis utrinque villosis subtus pallidis floralibus oblongo-lanceolatis, bracteis lanceolatis ciliatis calycem æquantibus, calycis glabriusculi dentibus truncatis subulato-acuminatis, corollæ galea villosa.—Cashmere and Choor.

91. P. *bracteosa,* (Royle); herbacea elata erecta subramosa, caule obverse villoso, foliis petiolatis ovalis obtusis grosse crenatis basi late cordatis rugosis supra adpresse pilosis subtus pallidis breviter tomentosis, floralibus subconformibus, bracteis oblongis exterioribus magnis foliaceis, dentibus calycinis truncatis breviter subulato-acuminatis, corollæ galea pilosissima.—Choor mountain and Kedarkonta.

92. Leonotis *nepetæfolia,* Br.—Benth. in Wall. l. c. 1. 59. —Plains of India.

93. Leucas *urticæfolia,* Br.—Benth. in Wall. l. c. 1. 60.—Lohargong in Bundelkund and Banks of the Jumna.

94. L. *cephalotes,* Spr.—Benth. in Wall. l. c. 1. 60.—Common in the plains of India.

95. L. *aspera,* Spr.—L. Plukenetii, Spr.—Benth. in Wall. l. c. 1. 60.—Common from the Himalayan range down the Jumna to Allahabad.

96. L. *linifolia,* Spr.—Benth. in Wall. l. c. 1. 60.—Province of Behar.

97. L. *hyssopifolia,* Benth. in Wall. l. c. 1. 60.—Kheeree pass leading to the Deyra Doon.

98. L. *lanata,* Benth. in Wall. l. c. 1. 61.—Deyra Doon.

99. L. *pilosa,* Benth. in Wall. l. c. 1. 62.—Kheeree pass.

100. L. *procumbens,* Desf.—Benth. in Wall. l. c. 1. 62.—Bundelkund.

AJUGOIDEÆ. *Benth.*

101. Anisomeles *ovata*, Br.—Benth. in Wall. l. c. l. 59.—Common over the whole of India, where it varies considerably in the clothing of the leaves, as well as in their form and the depth of the teeth.

102. Ajuga *decumbens*, Thunb.?—Benth. in Wall. l. c. l. 59.—Kheeree pass and Deyra Doon.

103. A. *remota*, Benth. in Wall. l. c. l. 59.—Deyra Doon and Nagkanda in the Himalayan range.

104. A. *parviflora*, Benth. in Wall. l. c. l. 59.—Mussooree.

105. Teucrium *quadrifarium*, Don.—Benth. in Wall. l. c. l. 58.—Mussooree. Common in the Himalayan range.

106. Teucrium *Royleanum*, Wall.—Benth. in Wall. l. c. l. 58.—Kheeree pass and Deyra Doon.

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(Tab. CXI. CXII.)

## DESCRIPTION OF TWO NEW SPECIES OF PERUVIAN FERNS,

By Dr. Greville and Dr. Hooker.

### Polypodium melanopum;

Fronde oblonga seu oblongo-obovata caudatim attenuata pectinatim pinnatifida, laciniis linearibus integerrimis ciliatis, soris serialibus, stipite aterrimo nitido parce piloso. (Tab. CXI).

Hab. Hanging vertically from the trunks of trees at Lurencucho, near Cuenca, at an elevation of about 9000 feet above the level of the sea. *Prof. W. Jameson.*

*Stipes* digitalis et ultra, gracilis, aterrimus, nitidus, parce setoso-pilosus. *Frons* spithamæa, circumscriptione oblonga seu oblongo-obovata, apice in caudam gracilem pinnatifidam 2 uncias longam attenuata, profunde pectinatim pinnatifida; laciniis sesquiuncialibus integerrimis obtusiusculis, ciliatis,

pinnatim nervosis. *Rachis* seu *costa primaria* gracilis, atra, nitida, superne viridis. *Sori* in omnibus laciniis etiam in cauda seriatim dispositi, rotundi, costam inter et marginem. *Capsulæ* globosæ, longe stipitatæ, annulatæ. *Semina* globoso-angulata, pellucida.

Difficult as are the pectinated kinds of *Polypodium* to be distinguished, we yet trust that the above characters will be found sufficient for the present individual, which we only possess from our valued friend, Professor William Jameson.

TAB. CXI. Polypodium melanopum. *Fig.* 1. A lacinia. *Fig.* 2, Capsules. *Fig.* 3, Seeds:—*magnified.*

### CRYPTOGRAMMA RETROFRACTA;

Fronde elongata ramosissima glabra flexuosa decomposito-pinnata, ramis retrofractis, pinnulis dichotomis segmentis linearibus ciliatis, soris furcatis. (TAB. CXII).

HAB. Near the village of Molleturo, at an elevation of 8000 feet above the level of the sea, growing on the ground. *Prof. W. Jameson.*

*Frons* 4-pedalis valde ramosa, repetitim pinnata, flexuosa, pinnis plurimis retrofractis, pinnulis dichotome divisis costatis linearibus glabris ciliatis obtusis nunc emarginatis seu bifidis. *Rachis primaria* glaberrima, flavo-fusca; *secundaria* alata, ciliata. *Sori* in pinnis ultimis lineares, duo sæpe confluentes, et ita furcati. *Capsulæ* fuscæ, brevissime stipitatæ, annulo magno cinctæ. *Semina* triangularia.

The present is, indeed, a very remarkable species of *Cryptogramma*, and quite distinct from any with which we are acquainted. Professor Jameson describes it as growing on the ground, and as being four feet in length; many of the primary pinnæ, especially the lower ones, are singularly and suddenly bent back, and the principal rachis is very zigzag.

TAB. CXII. *Fig.* 1, Segments of a pinna. *Fig.* 2, 3, Capsules. *Fig.* 4, Seeds:—*magnified.*

THE END.

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MUIR, GOWANS, & CO. PRINTERS, GLASGOW.

Ægiceras fragrans.

Swan Sc

SUPPL. TAB. XXII

*Combretum Heyneanum.*

SUPPL. TAB. XXIII.

Vallisneria spiralis. Mas.

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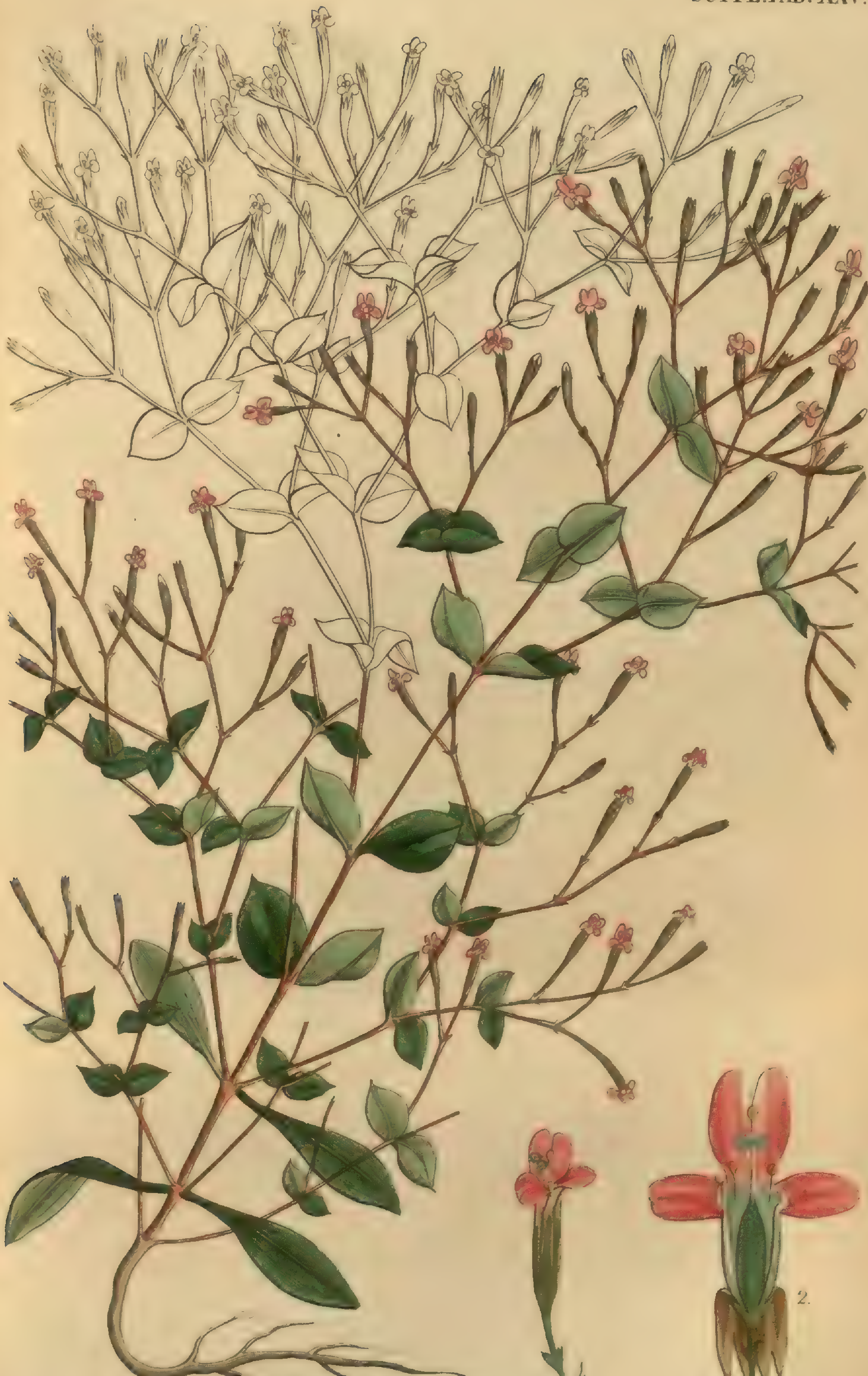
SUPPL. TAB. XXIV.

*Vallisneria spiralis. Linn.*

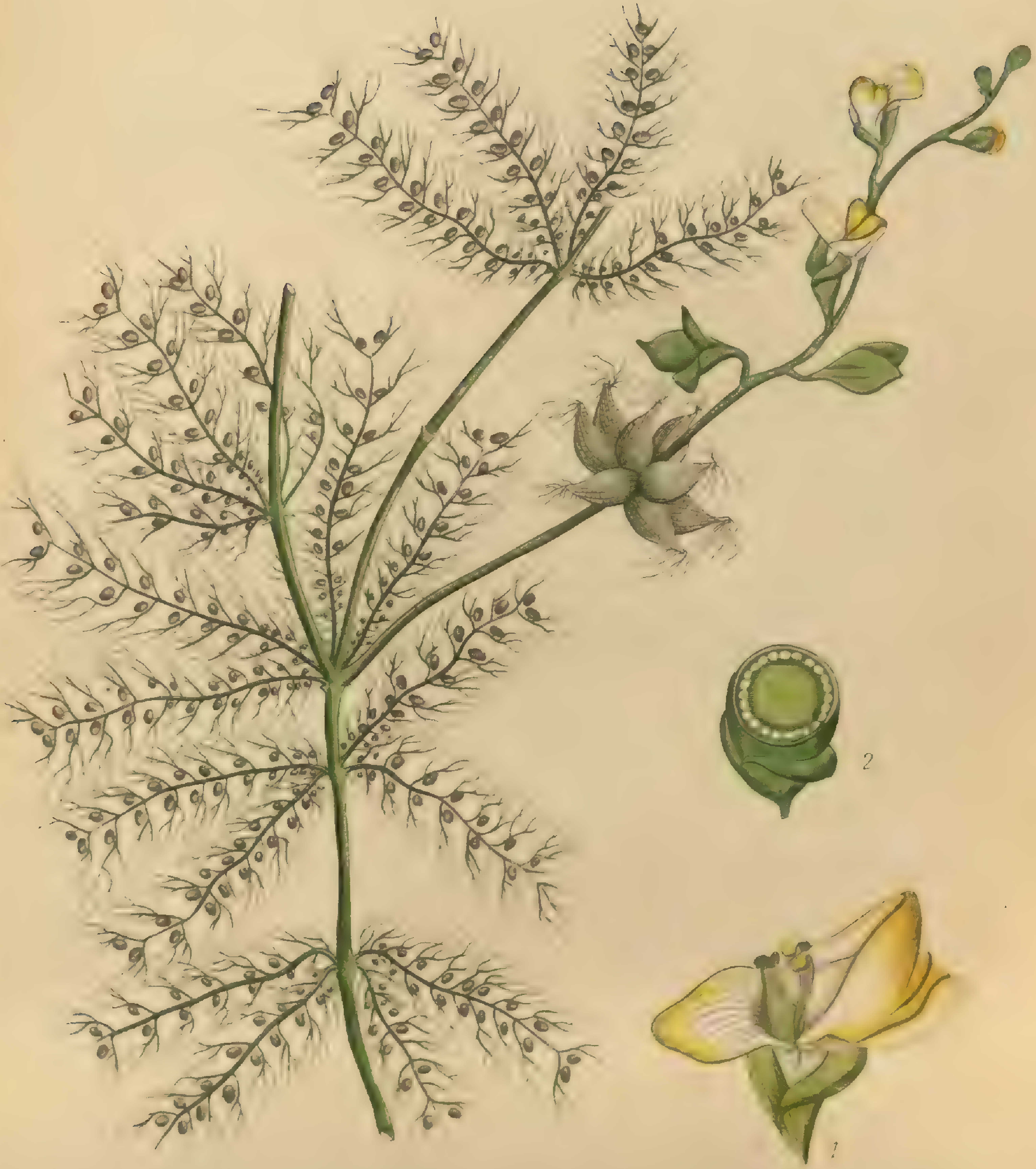
SUPPL. TAB. XXV.



*Pladera virgata.*

*Pterospermum suberifolium.*

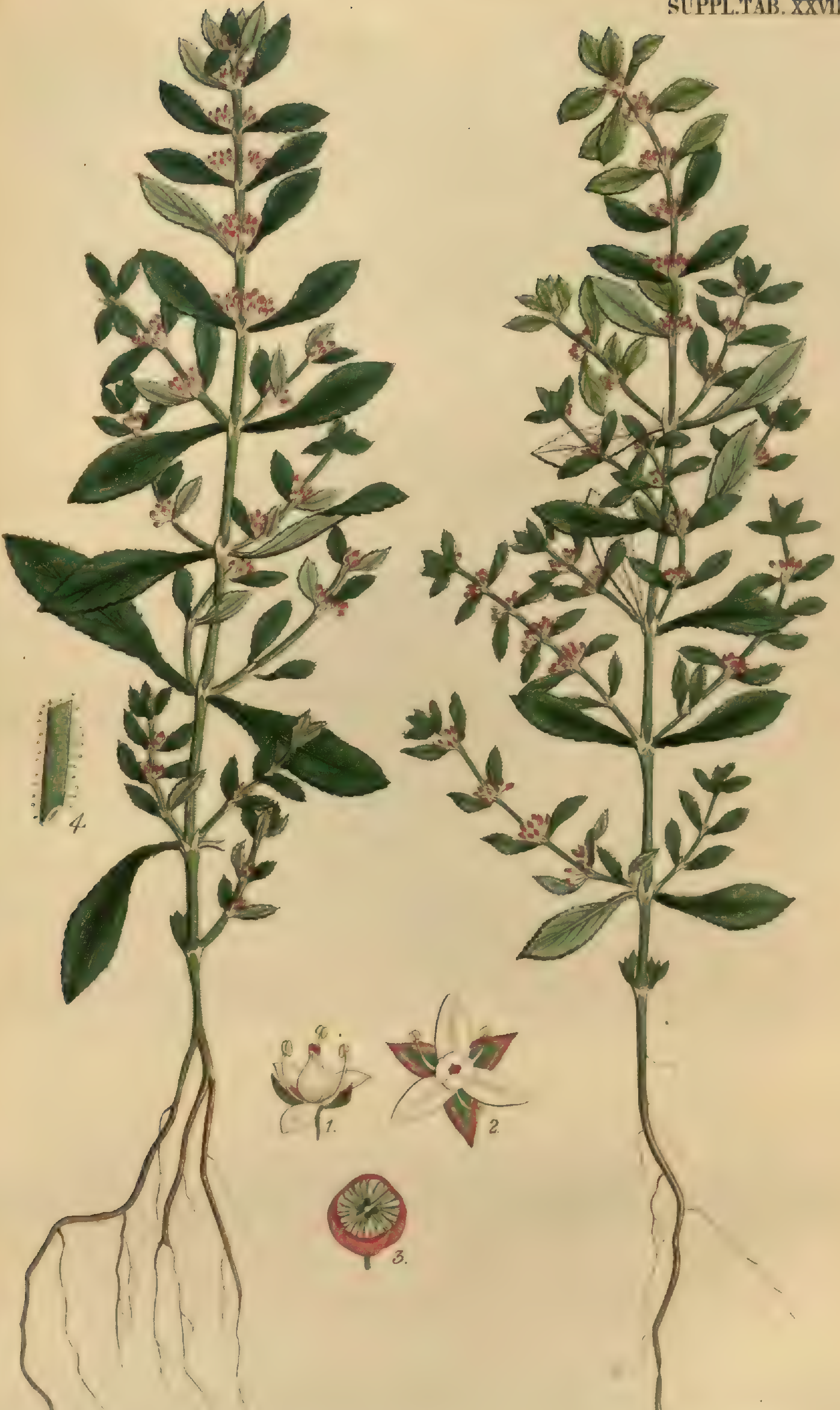
SUPPL. TAB. XXVII.



*Utricularia stellaris.*

Swan Sc.

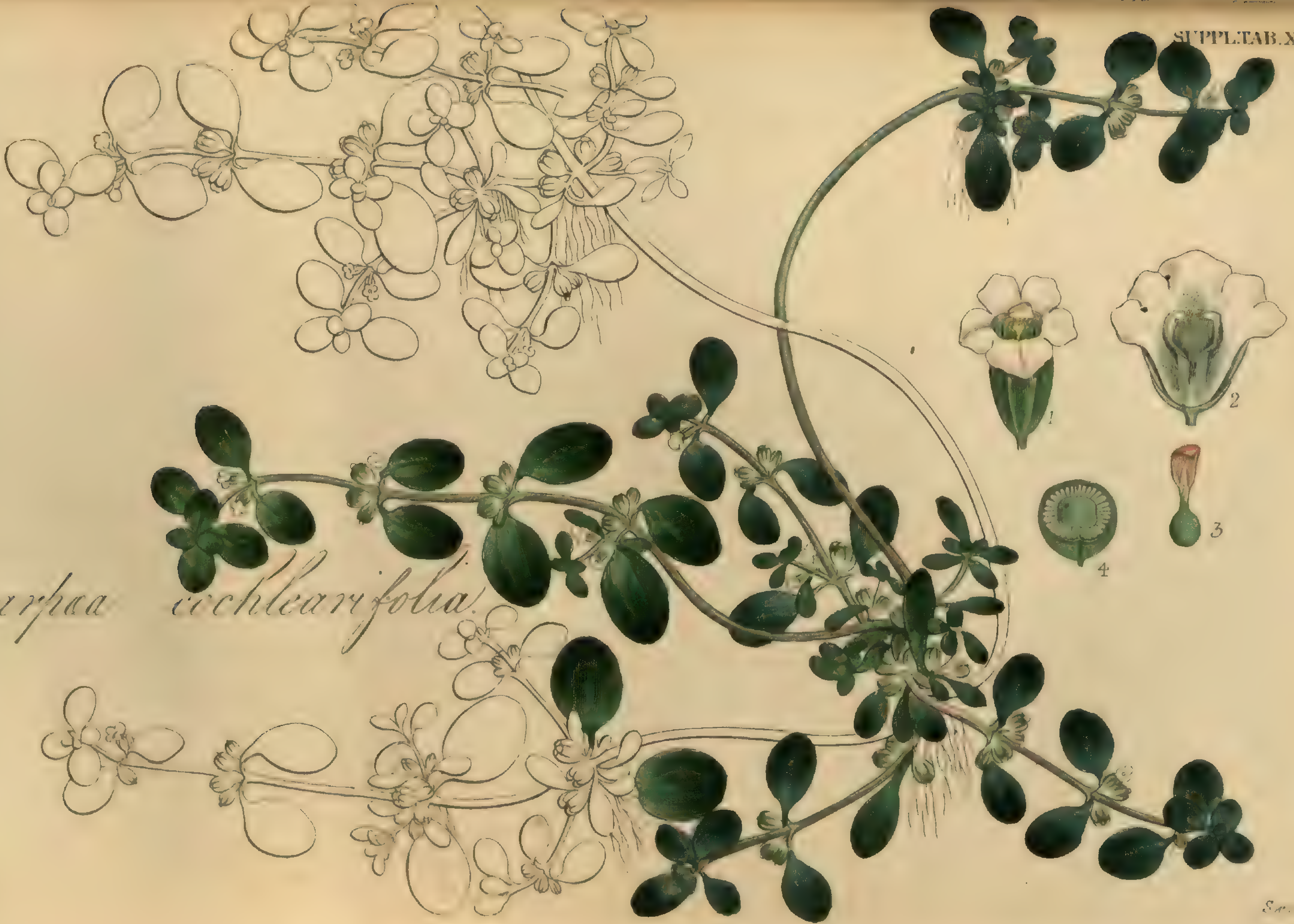
SUPPL. TAB. XXVIII.



Bergia ammannoides.

Swan Sc.

SUPPL.TAB. XXIX.



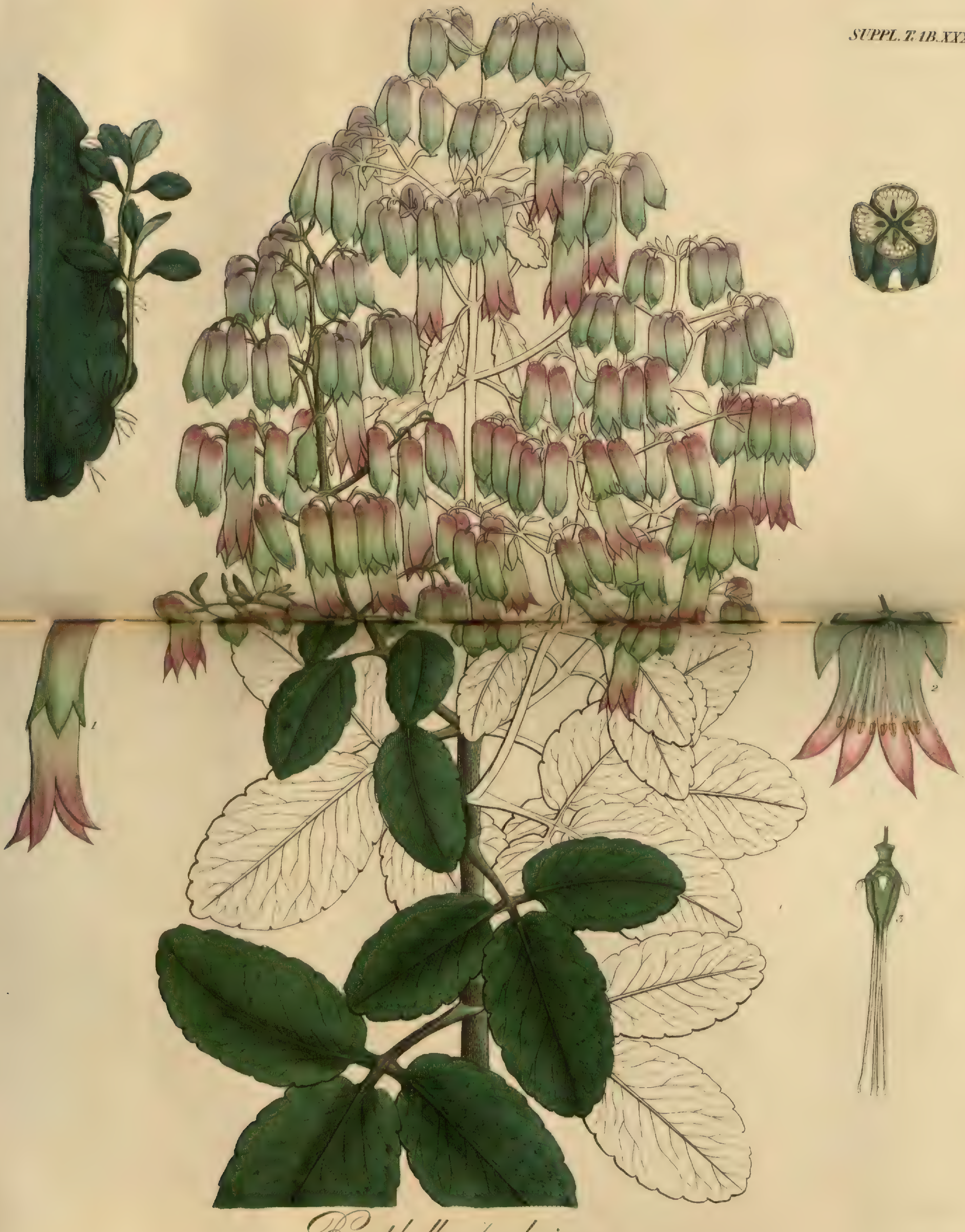
*Microcarpaea cochlearifolia.*

Swan sc.

SUPPL. TAB. XXX.

*Villarsia indica.*

SUPPL. TAB. XXXI.



*Bryophyllum calycinum.*

Swan Sc.

SUPPL. TAB. XXXII.

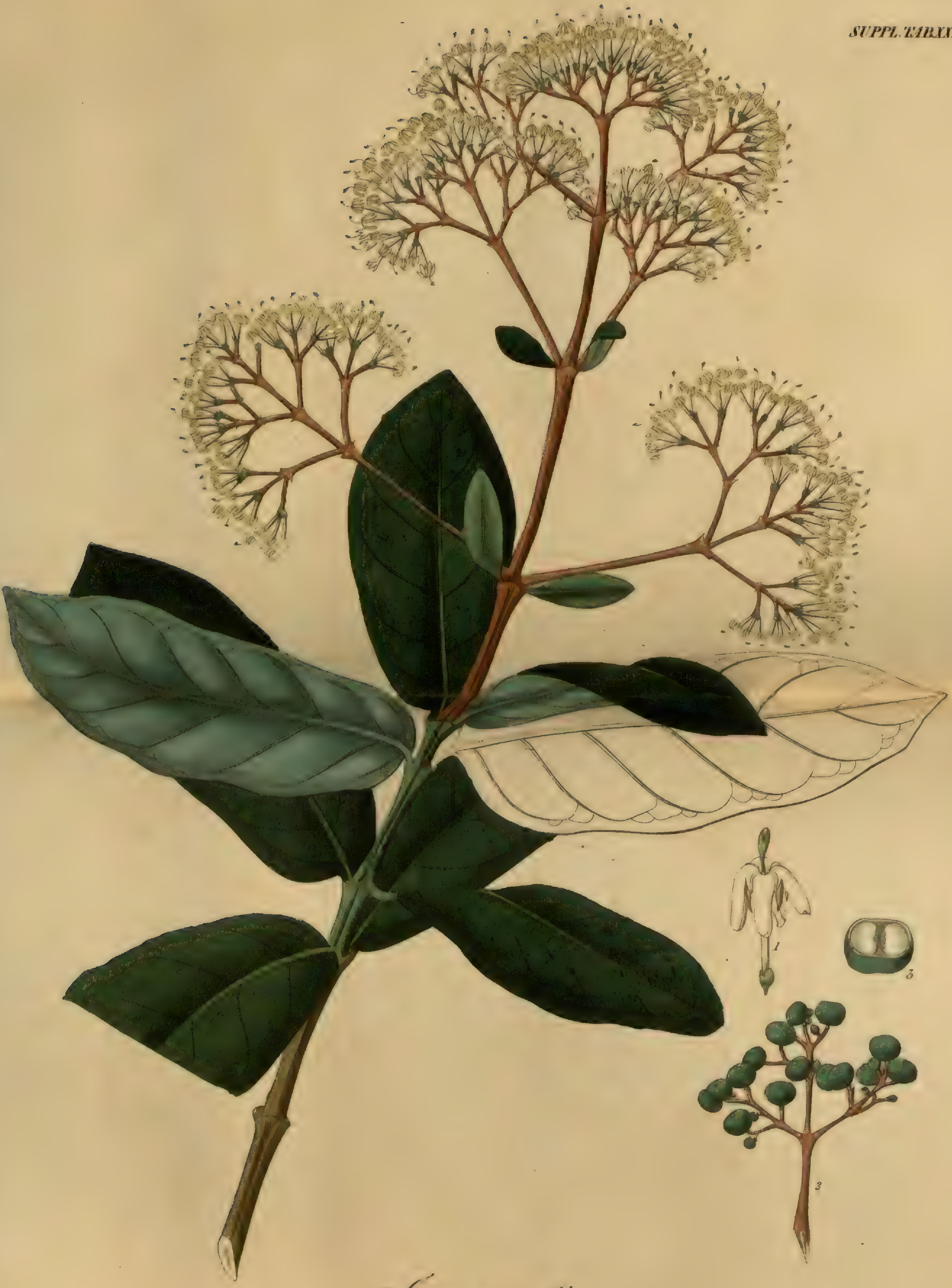
1.

*Butea frondosa.*

Swan Sc.

SUPPL. TAB. XXXIII

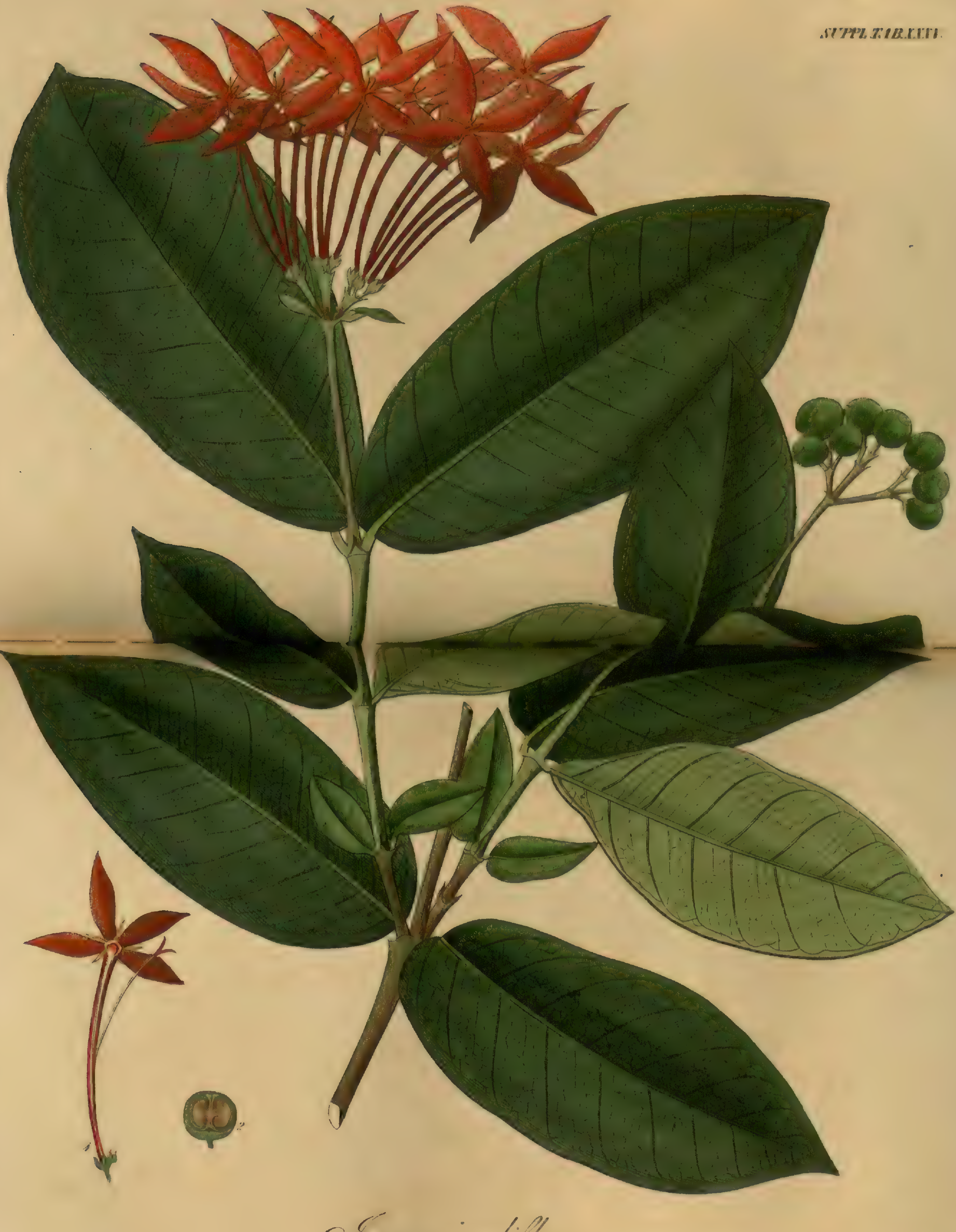
*Limonia Missionis.*



*Ixora parviflora.*

Swan Sc.

SUPPL. TAB. XXVI.



*Ixora grandiflora.*

Swan Sc.

Salacia lævigata.

Smith S.

SUPPL. TAB. XXXVII.

Cadaba triphylla.

Swan Sc.

Convolvulus Turpethum.

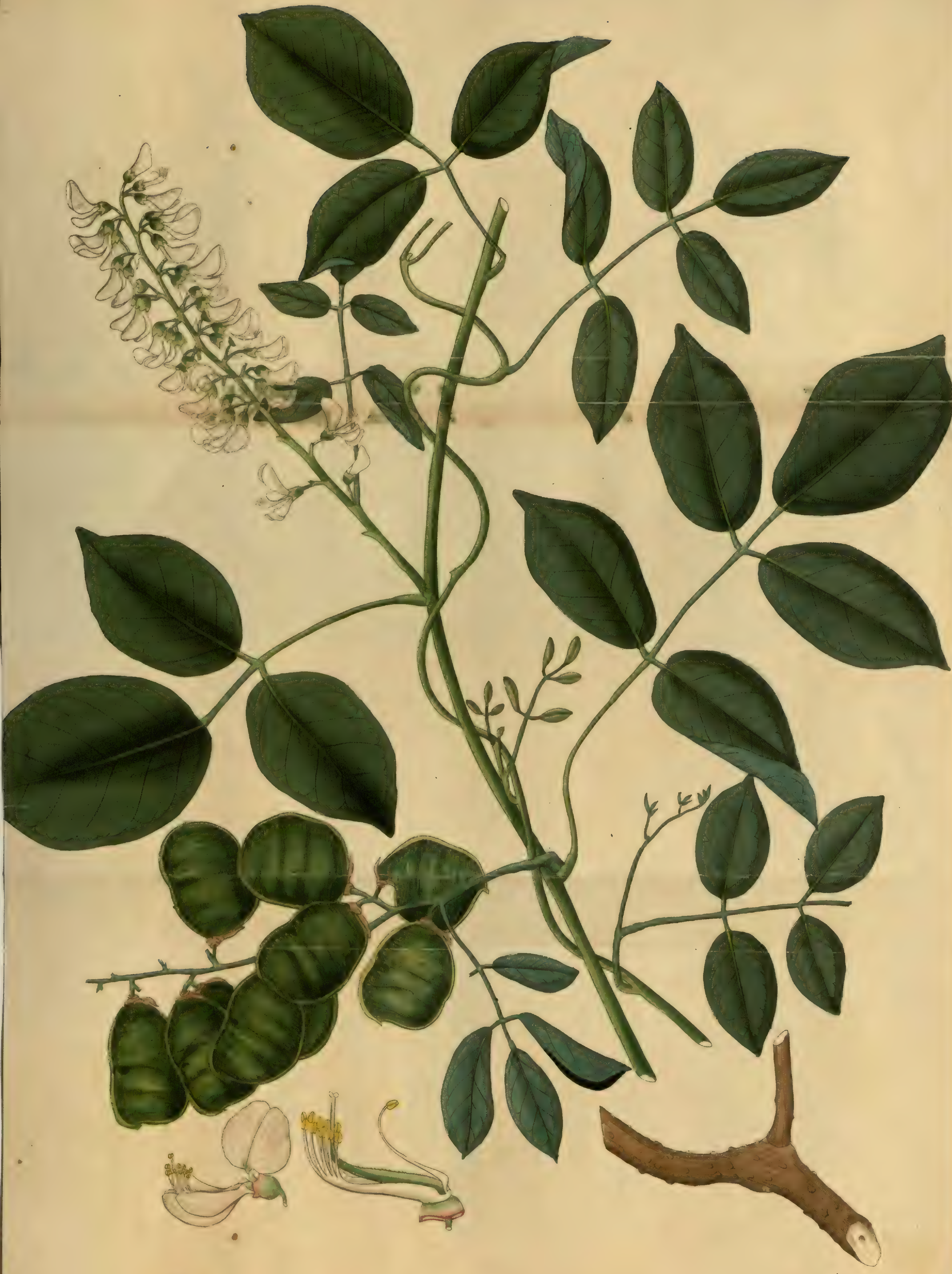
Glycosmis triphylla.

SUPPL. TAB. XL.

Juſsiaea repens.

Swan Sc.

SUPPL.TAB.XLI.



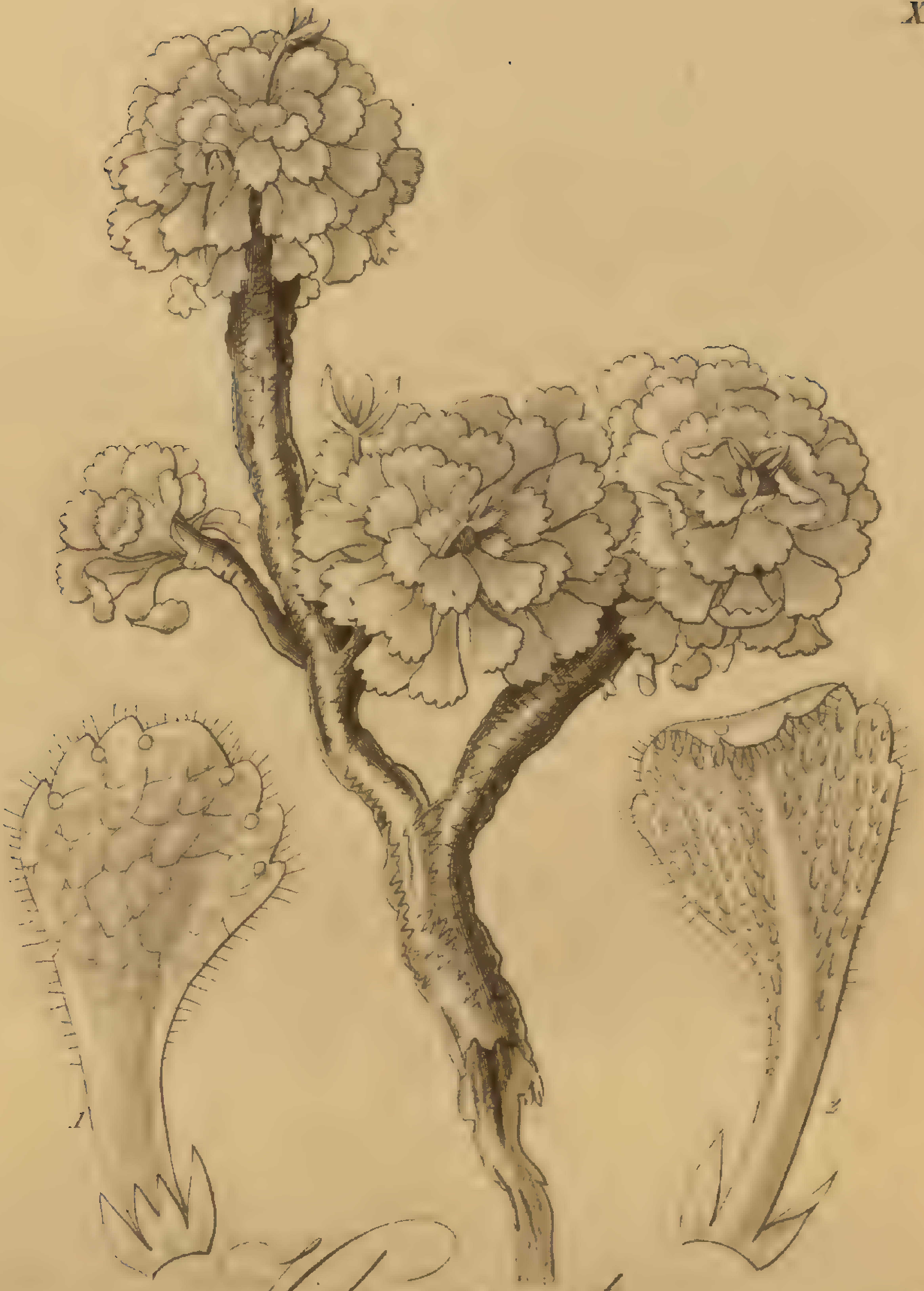
*Pongamia triphyll.*

Swan Sc.

XCVI.

Mathewsia foliosa

XCVII.

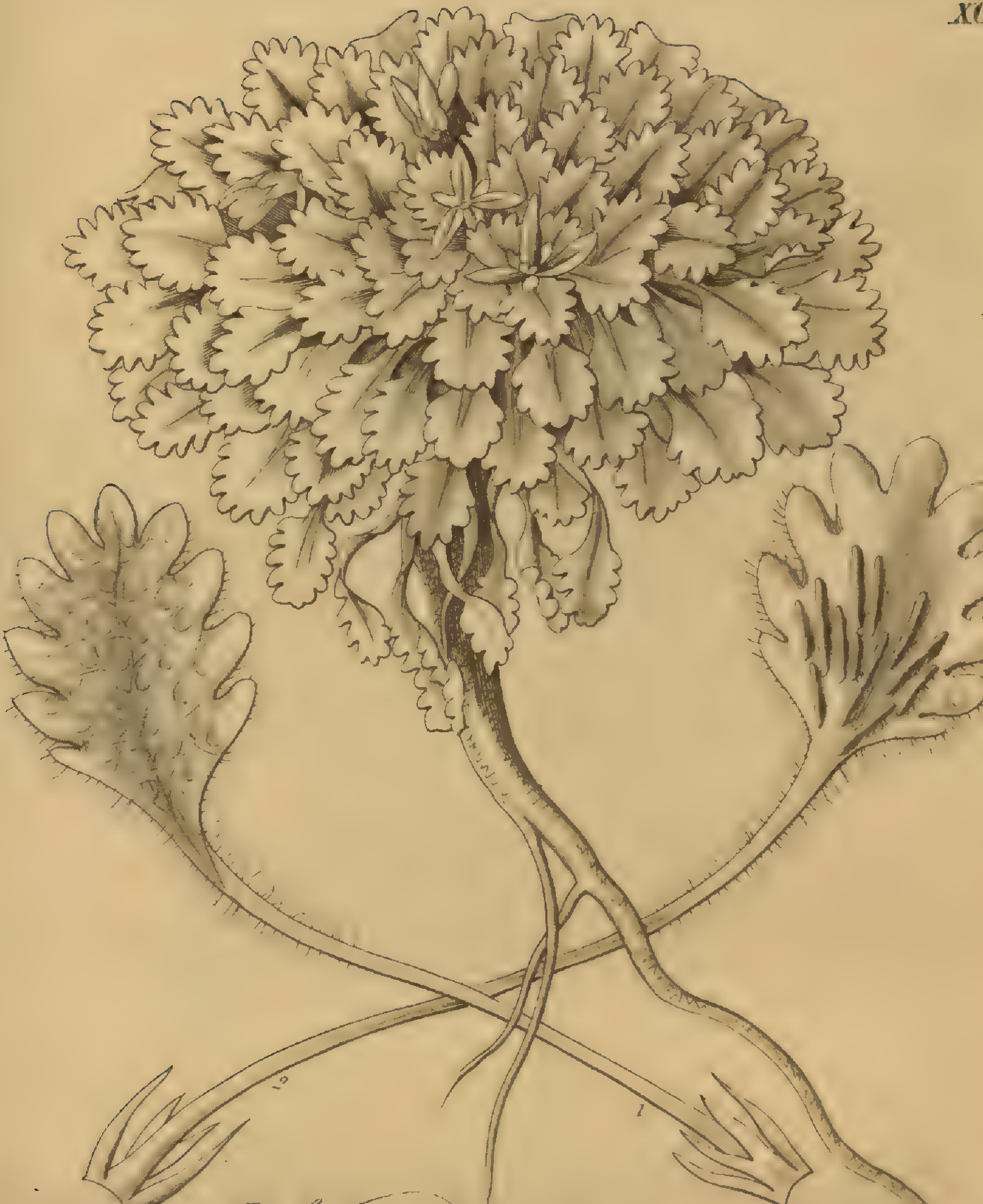


W. J. H. delt

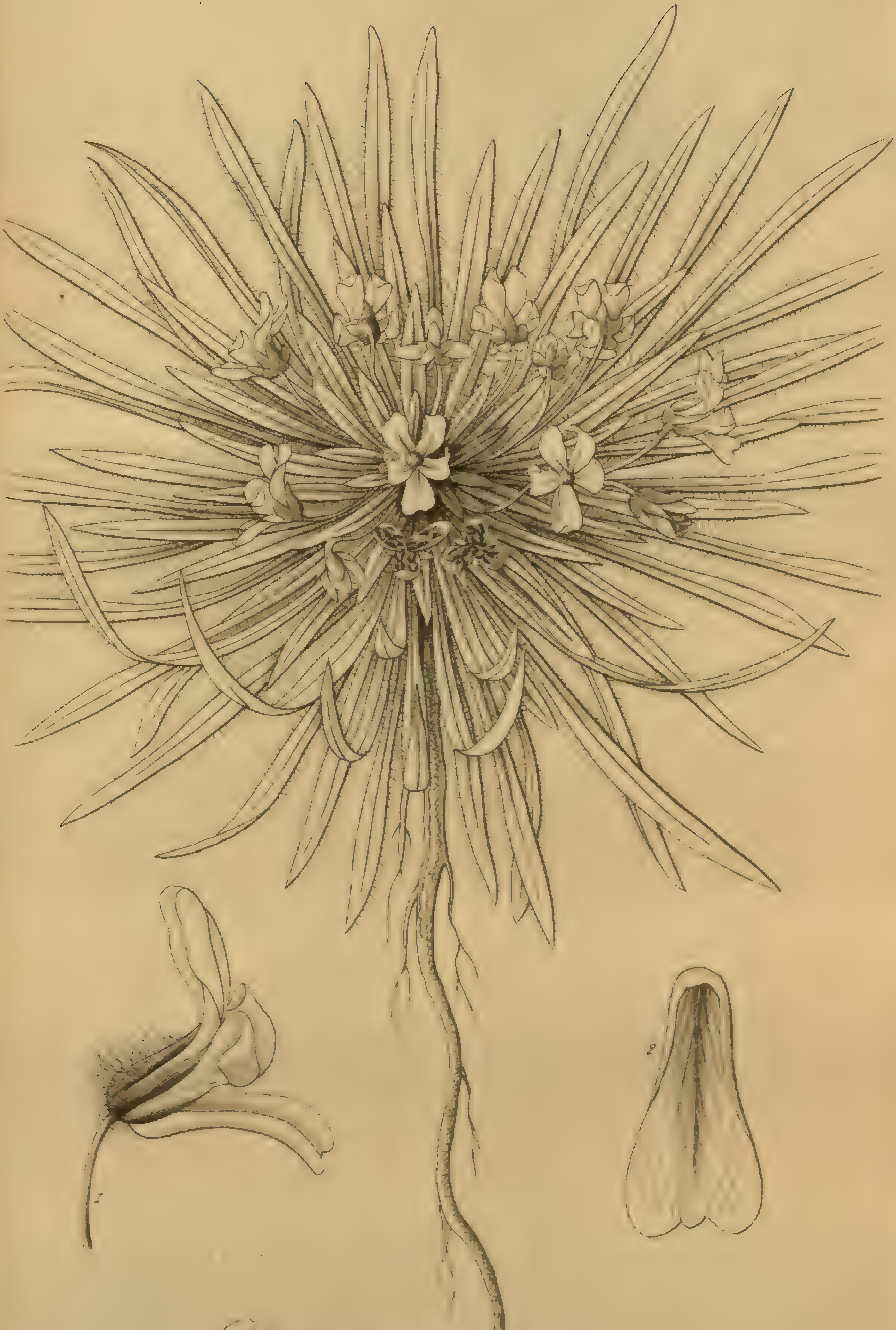
Viola congesta

Swan sc.

XCVIII.



F. H. delt. *Viola* [illegible] [illegible]



Viola Asterias.

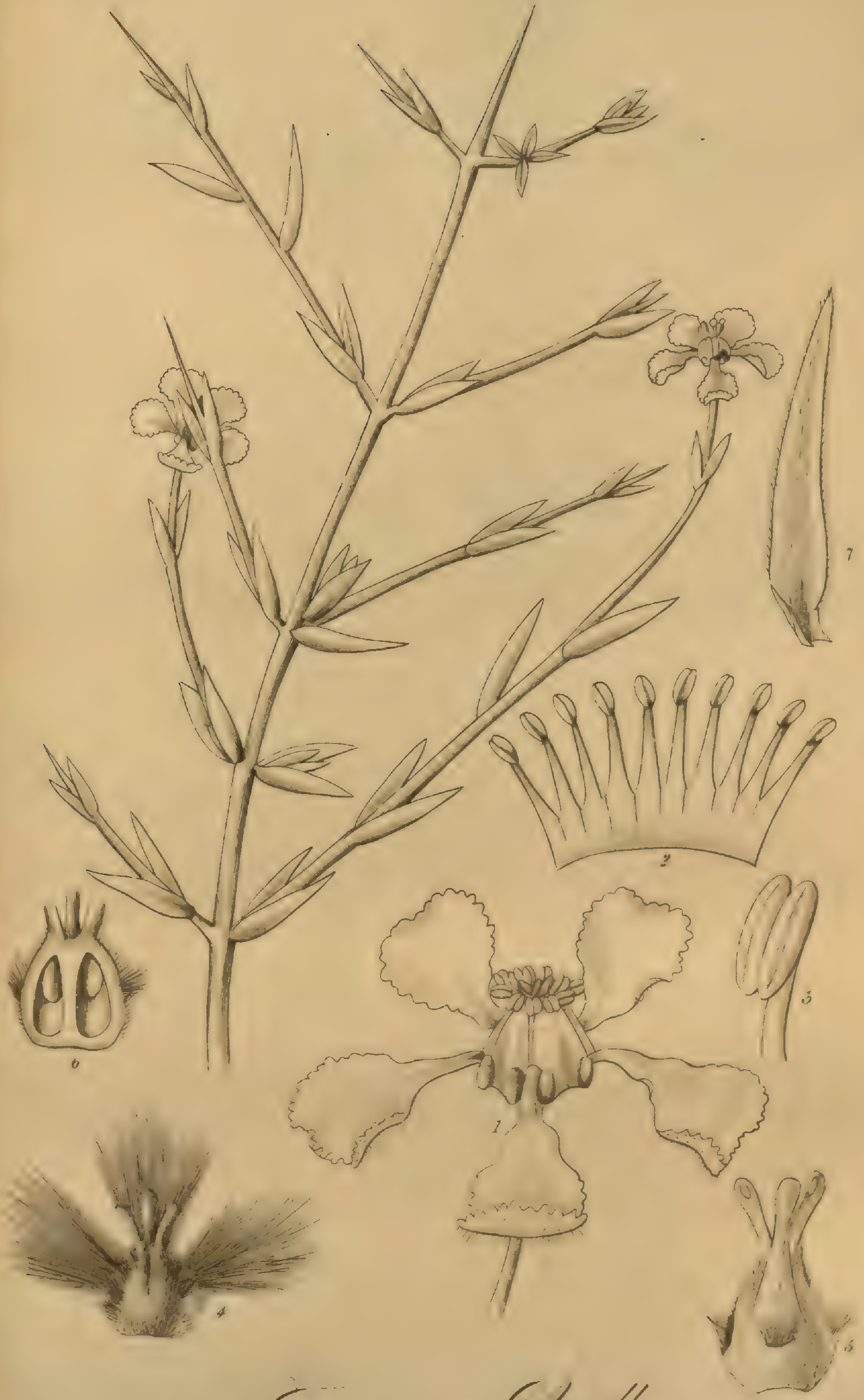
[illegible] J H del.

[illegible]

TAB. C.

Crinodendron Patagua

W. Fitch del. Swan Sc.

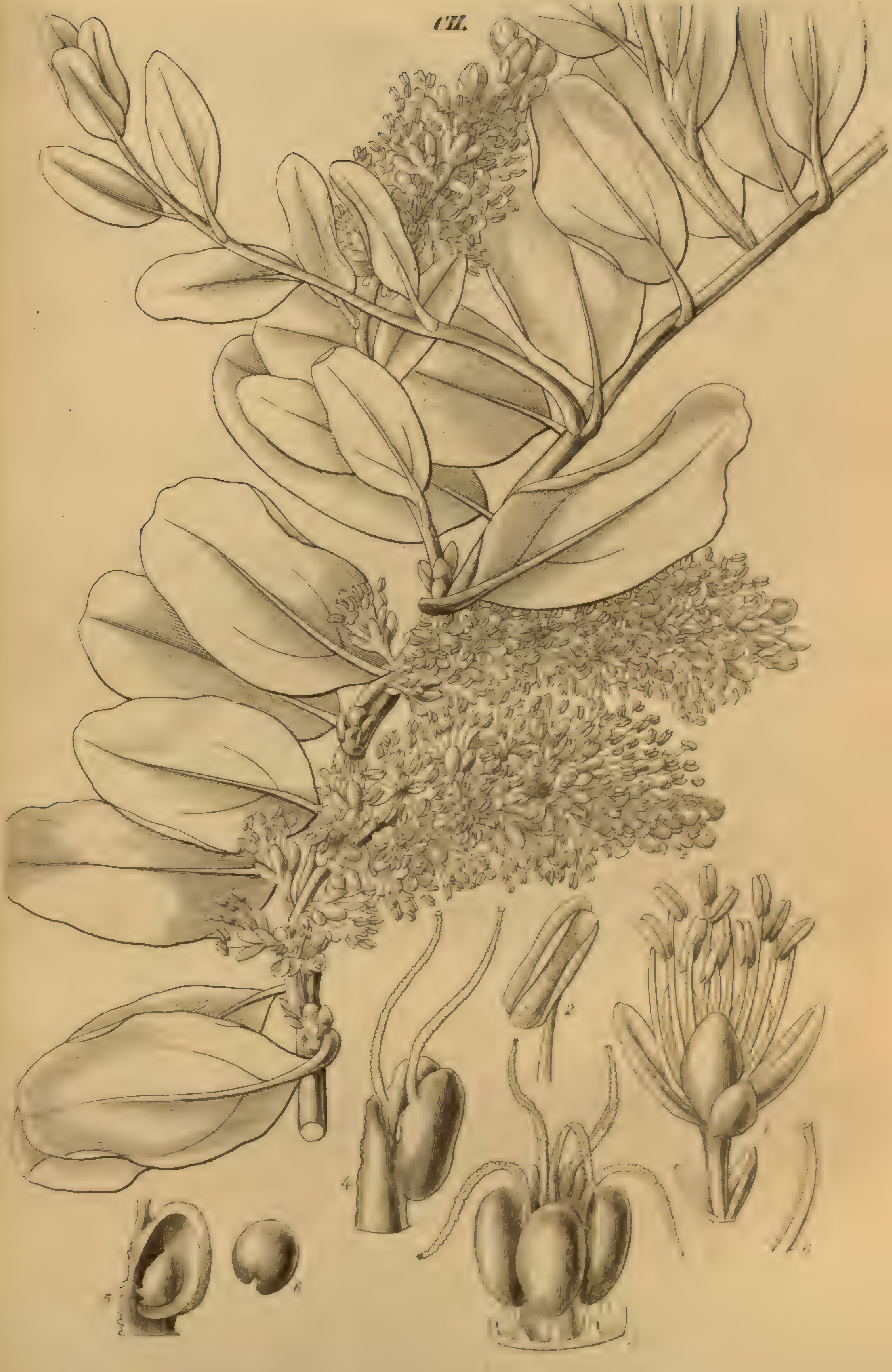


W.H. del.

Tricomaria Usillo

Swan Sc.

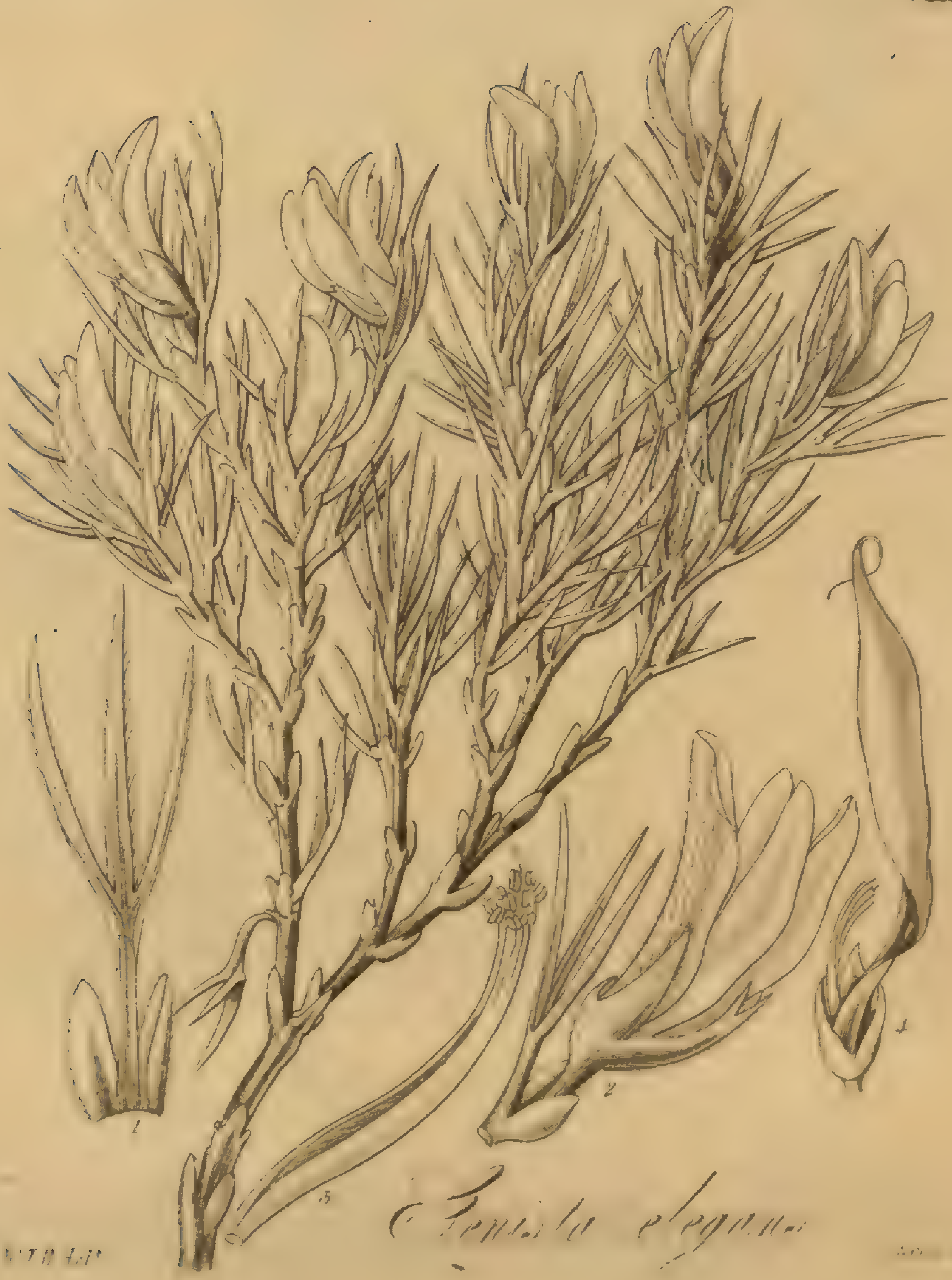
CII.



*Bridgesia spicata*

Swan Sc.

CIII.



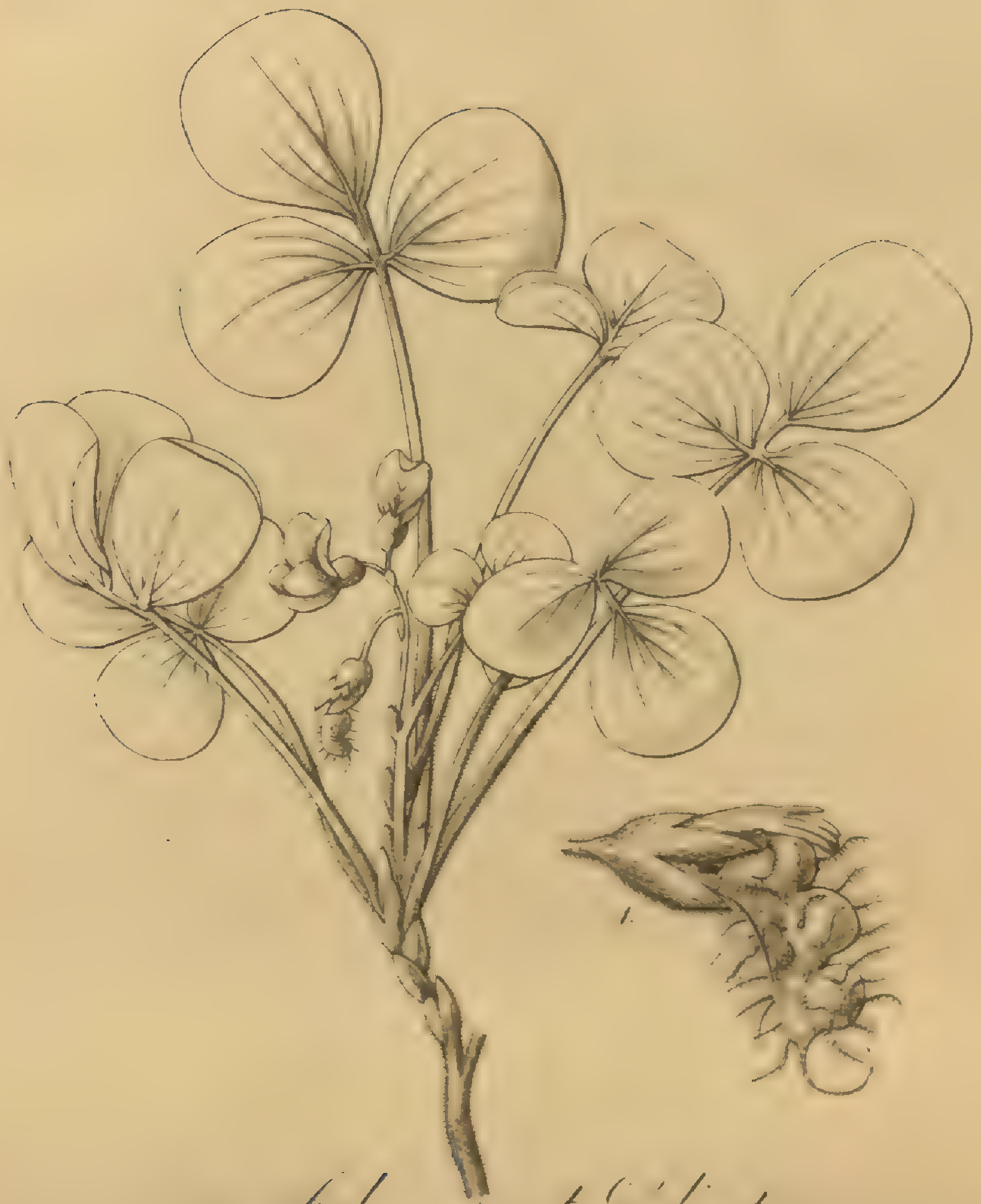
Genista elegans

W.T.H. del.

CII.

*Adesmia bracteata*

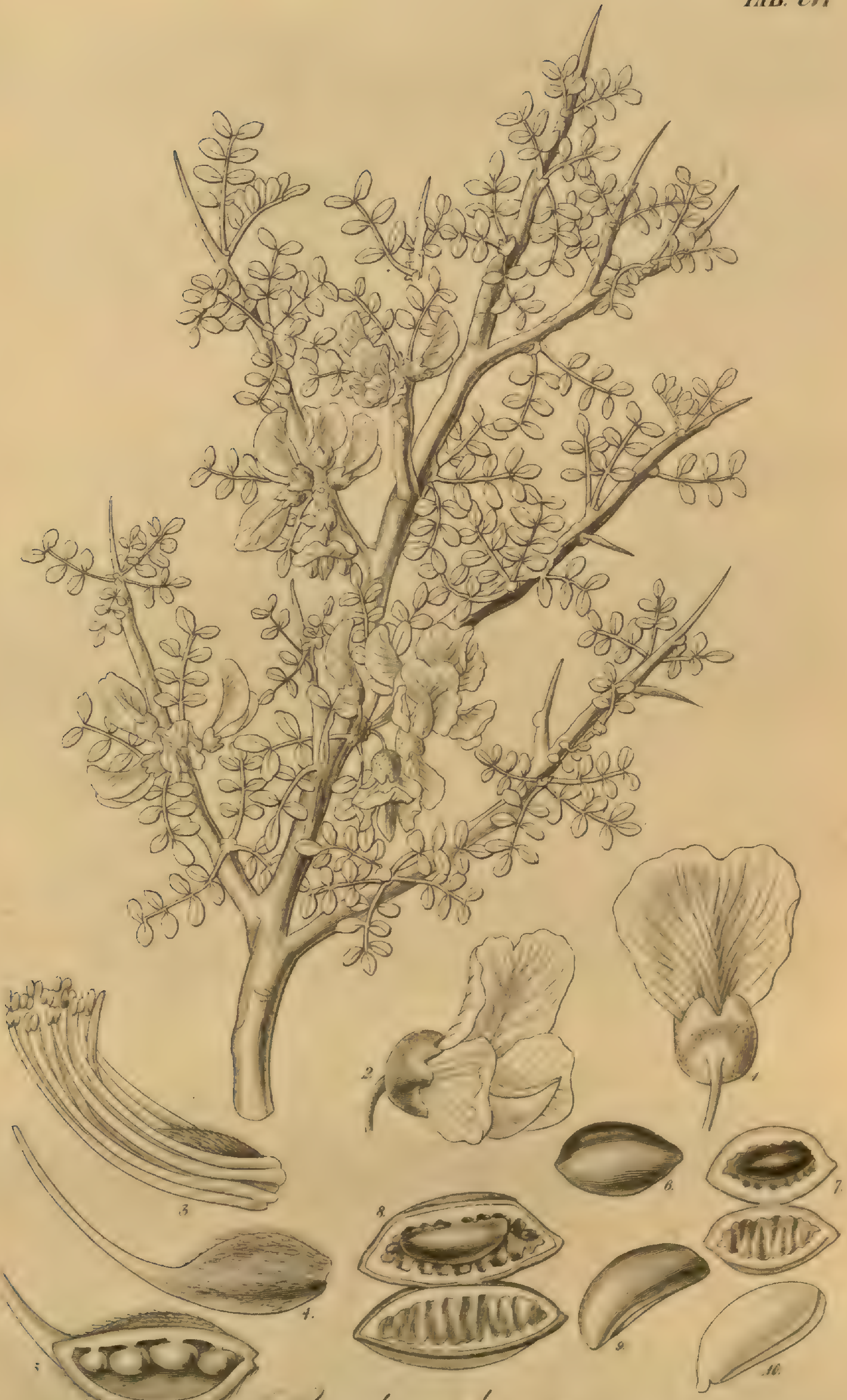
TAB. CV.



Adesmia trifoliata

W. J. H. delt Swan

TAB. CVI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Gourliea decorticans

W. J. H. del.
Swan Sc.

TAB. CVII.

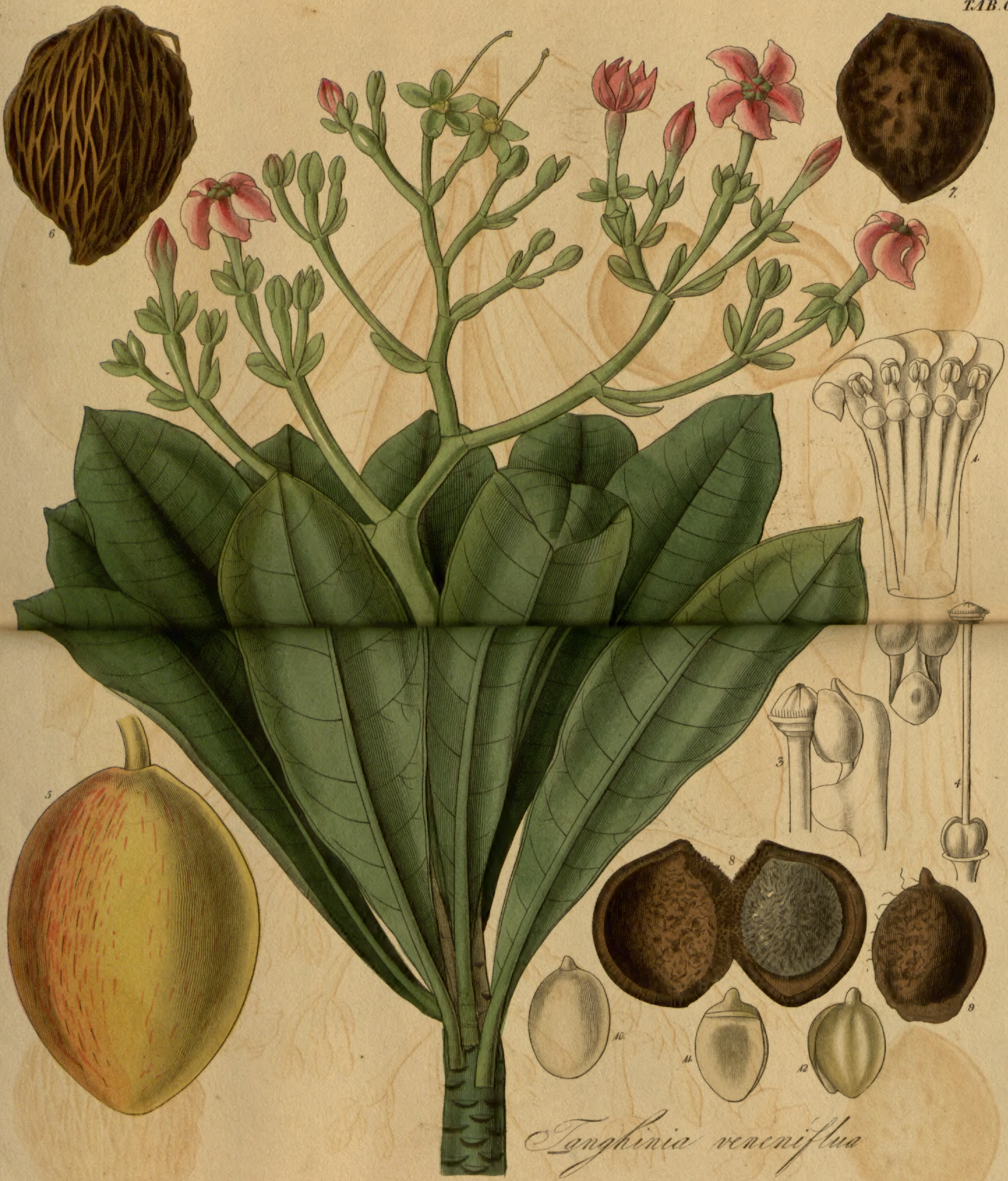
S. & W.J.H. del. *Sarothra Drummondii.* Swan Sc.

CVIII.

Cardamine rhomboidea

*Cardamine rotundifolia*

TAB. CX.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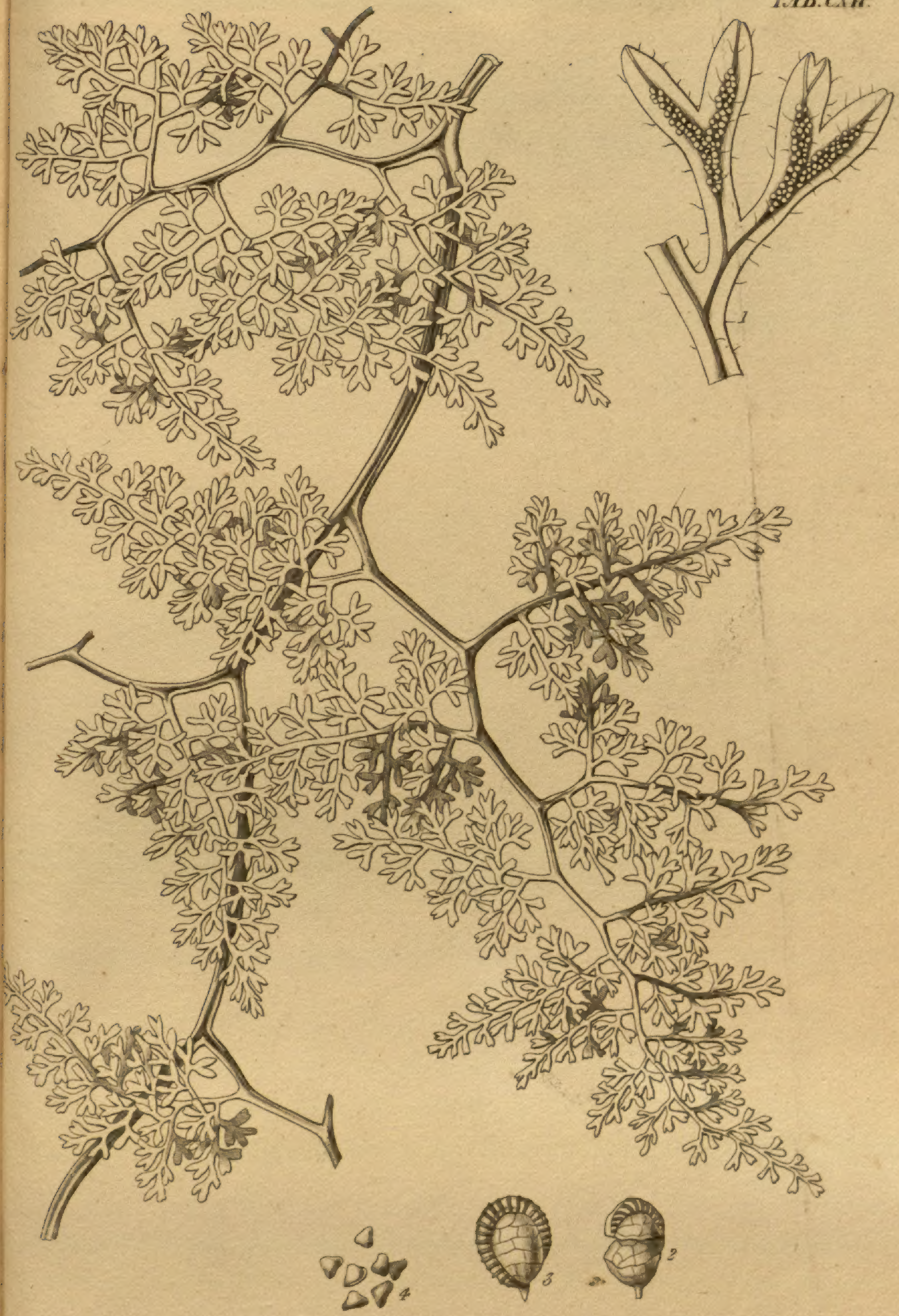
*Tanghinia veneniflua*

Prof. W. Bojer delᵗ

Swan Sc.

Greville del. *Polypodium melanopum* Swan Sc.



Cryptogramma retrofracta.

Dr Greville delt

Swan Sc.

[over!]

The continuation of the Bot. Misc. is formed by the Journal of Bot. Vol. I (1834) etc. the first plate of which corresponds to the last plate here, being Pl. CXIII.

Bay.